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COMMERCIAL FERTILIZERS

REPORT FOR 1934

E. M. BAILEY

*Chemist in Charge
Department of Analytical Chemistry*

Connecticut
Agricultural Experiment Station
New Haven

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COMMERCIAL FERTILIZERS REPORT FOR 1934

STATUTE AND REGULATIONS REGARDING COMMERCIAL FERTILIZERS

The term "commercial fertilizers" as used in the Connecticut fertilizer statute includes any and every substance imported, manufactured, prepared or sold for fertilizing or manuring or soil amendment purposes, except barnyard manure and stable manure that have not been artificially treated or manipulated, marl and lime.

The seller is responsible for the proper labelling of each package of fertilizer, for the registration of each brand sold or offered for sale, for the payment of the required analysis fee and for the payment of the tonnage tax. If, however, proper labelling, registration and payments of analysis fees and of tonnage tax have been provided for by the manufacturer or by another responsible person, all sellers of such brands are released from the above mentioned requirements. The retailer, therefore, should assure himself that the requirements of the law have been met by the manufacturer of the brands which he handles, or himself be prepared to meet all these requirements.

It frequently happens that a manufacturer or jobber sells fertilizer materials which are the products of, and which are registered by, another firm or individual. Distributors in such cases should sell such materials by the exact brand names under which they are registered in order that there may be no mistake as to the identity of the brands. Any change in the brand names, or failure to make the identity of the brand and its manufacturer clear, makes the distributor liable for the registration of the product as his own brand.

The law exempts from registration, and from other requirements referred to, only (1) fertilizers passing through the state in transit; (2) fertilizers and fertilizer materials shipped to regular fertilizer factories to be used for manufacturing purposes; and (3) fertilizers and fertilizer chemicals sold to the Connecticut Agricultural Experiment Station for experimental purposes.

NOTE: Analyses reported in this bulletin were made by Messrs. Nolan, Mathis and Walden; microscopic examinations by Miss Shepard; inspection and sampling by Mr. Churchill; and compilations by Mrs. Vosburgh.

RECENT CHANGES AFFECTING FERTILIZER CONTROL

LABELLING

Mixed fertilizers offered for sale in this State during the year 1933 were held to the requirements of a regulation issued by this Station June 25, 1931. The regulation is as follows:

"In view of the resolution passed by the Fertilizer Control Officials of the thirteen Northeastern States favoring (1) the statement of 'grade' as a part of the brand name of mixed fertilizers, e.g., XX Potato Manure 4-8-4; (2) that the significance of 'grade' shall be nitrogen, available phosphoric acid, and water-soluble potash, and in that order, e.g., XX Potato Manure 4-8-4 meaning 4% nitrogen (not 4% ammonia), 8% available phosphoric acid and 4% water-soluble potash; (3) that statements of grade and of guaranteed analysis shall be in whole numbers; and (4) that statements of guaranties shall include only minimum percentages of nitrogen, available phosphoric acid and water-soluble potash; and inasmuch as these recommendations are in accord with rules adopted by the Association of Official Agricultural Chemists, which rules are required by Sec. 5 of the Connecticut fertilizer law to be followed in administering the act; this Station will, on and after January 1, 1932, observe the foregoing procedure and urge its adoption by all concerned with the manufacture, sale and distribution of fertilizers and by those charged with the dissemination of information concerning fertilizers and fertilizer problems.

"In accordance with this understanding and acceptance of terms and procedure this Station will expect (1) that mixed fertilizer offered for registration for the year 1932 and thereafter will carry as a part of the brand name, whenever possible, the grade of the mixture; (2) that the statement of the grade will be in whole numbers; (3) that the significance of the numerals expressing the grade, and the order of them, will be nitrogen (not ammonia), available phosphoric acid and water-soluble potash; (4) that the statement of guaranteed analysis will give the percentages, in whole numbers only, of nitrogen, available phosphoric acid and water-soluble potash, and in that order; and (5), that tags or stencils upon bags will agree with the registration.

"In the case of mixtures in which phosphoric acid is derived from sources (e.g., bone and tankage), in which available phosphoric acid cannot be adequately evaluated by present analytical methods, total phosphoric acid may be stated in the guaranteed analysis, and the statement of grade may be omitted. In the statement of grade, total phosphoric acid may not be substituted for available."

While this regulation applies to *mixed* fertilizers only, it is recommended that guaranties for raw materials follow the spirit of the ruling so far as may be. Nitrogenous raw materials, for example, should be guaranteed in terms of nitrogen, but not necessarily in whole numbers; bone and tankage should show guaranties expressed in terms of nitrogen and total phosphoric acid rather than ammonia and bone phosphate of lime as formerly.

In the case of mixed fertilizers in which the phosphoric acid is derived from materials such as bone, in which present analytical methods do not adequately evaluate available phosphoric acid, it was regarded as advisable to omit the statement of grade and allow total phosphoric to be given in the guaranteed analysis, preferably instead of available, but if desired, in addition to it. In any case the qualifying phrase, "All the phosphoric acid is derived from bone", is permitted.

METHODS OF ANALYSIS

Phosphoric acid, insoluble in ammonium citrate solution, has been determined this year according to the revised methods adopted by the Association of Official Agricultural Chemists at the annual meeting October, 1931, whereby a 1-gram charge of fertilizer is used instead of 2 grams and the time of digestion in ammonium citrate solution increased from 30 minutes to 1 hour.

DEFINITIONS OF FERTILIZER MATERIALS AND
INTERPRETATION OF TERMS USED IN
FERTILIZER CONTROL

For the purpose of bringing about a better understanding among control officials and the fertilizer industry as to the identity of fertilizer materials and the significance of terms used in interpreting results of analysis, a special committee of the Association of Official Agricultural Chemists was appointed in 1921 to consider this question and from time to time pronouncements have been made.

The following definitions and interpretations are now official.¹

DEFINITIONS

ACIDULATED FISH TANKAGE, ACIDULATED FISH SCRAP

Acidulated fish tankage, acidulated fish scrap, is the rendered product derived from fish and treated with sulfuric acid.

ACTIVATED SEWAGE PRODUCTS

Activated sewage products are those made from sewage freed from grit and coarse solids and aerated after being inoculated with micro-organisms. The resulting flocculated organic matter is withdrawn from the tanks, filtrated with or without the aid of coagulants, dried, ground, and screened.

AMMONIATED SUPERPHOSPHATE

Ammoniated superphosphate is a product containing superphosphate and/or dissolved bone and nitrogenous compounds, but without the addition of potash.

ANALYSIS

Analysis, as applied to fertilizers, designates the percentage composition of the product expressed in terms of nitrogen, phosphoric acid, and potash in their various forms.

ASHES FROM LEACHED WOOD

Ashes from leached wood are unleached ashes resulting from the burning of wood that has been exposed to or digested in water or other liquid solvent, as in the extraction of dyes, so that a part of the plant food has been dissolved and removed.

BASIC PHOSPHATE SLAG

Basic phosphate slag is a by-product in the manufacture of steel from phosphatic iron ores. The product shall be finely ground and shall contain no admixture of

¹*Official and Tentative Methods of Analysis, A.O.A.C., 1930, page 490.*

materials other than what results in the original process of manufacture.. It shall contain not less than twelve per cent (12%) of total phosphoric acid (P_2O_5), not less than eighty per cent (80%) of which shall be soluble in two per cent (2%) citric acid solution according to the Wagner method of analysis. Any other phosphate slag not conforming to this definition shall be designated low grade.

BRAND AND BRAND NAME

A brand is a term, design, or trademark used in connection with one or several grades of fertilizers.

A brand name is a specific designation applied to an individual fertilizer.

CRUDE, INERT, OR SLOW-ACTING NITROGENOUS MATERIALS

Crude, inert, or slow-acting nitrogenous materials are unprocessed organic substances relatively high in nitrogen, but having a very low value as plant food and showing a low activity by both the alkaline and neutral permanganate methods—below fifty per cent (50%) and eighty per cent (80%) respectively.

DISSOLVED BONE

Dissolved bone is ground bone or bone meal that has been treated with sulfuric acid.

DRIED BLOOD

Dried blood is the collected blood of slaughtered animals, dried and ground, and containing not less than twelve per cent (12%) of nitrogen in organic forms.

DRIED, PULVERIZED, OR SHREDDED MANURES

Dried, pulverized, or shredded manures are what the name indicates, and not mixtures of manures and other materials.

FERTILIZER GRADE

Fertilizer grade shall represent only the minimum guarantee of its plant food expressed in terms of nitrogen (not ammonia), available phosphoric acid, and water-soluble potash.

FISH TANKAGE, FISH SCRAP, DRY GROUND FISH, FISH MEAL FERTILIZER GRADE

Fish tankage, fish scrap, dry ground fish, fish meal fertilizer grade is the dried ground product derived from rendered or unrendered fish.

GARBAGE TANKAGE

Garbage tankage is the rendered, dried, and ground product derived from waste household food materials.

GROUND RAW BONE

Ground raw bone is dried ground animal bones that have not been previously steamed under pressure.

GROUND STEAMED BONE

Ground steamed bone is ground animal bones that have been previously steamed under pressure.

HOOF AND HORN MEAL

Hoof and horn meal is processed, dried, and ground hoofs and horns.

KAINIT

Kainit is a potash salt containing potassium and sodium chlorides and sometimes sulfate of magnesia with not less than twelve per cent (12%) of potash (K_2O).

LEACHED WOOD ASHES

Leached wood ashes are ashes from burned unleached wood with part of their plant food removed by artificial means or by exposure to rains, snows, or other solvent.

MANURE SALTS

Manure salts are potash salts containing high percentages of chloride and from twenty per cent (20%) to thirty per cent (30%) of potash (K_2O). The term double manure salts is discontinued.

MURIATE OF POTASH (COMMERCIAL POTASSIUM CHLORIDE)

Muriate of potash is a potash salt containing not less than forty-eight per cent (48%) of potash (K_2O), chiefly as chloride.

NITRATE OF POTASH (COMMERCIAL POTASSIUM NITRATE)

Nitrate of potash is a salt containing not less than twelve per cent (12%) of nitrogen and forty-four per cent (44%) of potash (K_2O).

NITRATE OF SODA (COMMERCIAL SODIUM NITRATE)

Nitrate of soda is commercial sodium nitrate containing not less than fifteen per cent (15%) of nitrogen, chiefly as sodium nitrate.

PRODUCTS SECURED BY HEATING CALCIUM PHOSPHATE WITH ALKALI SALTS
CONTAINING POTASH

Products secured by heating calcium phosphate with alkali salts containing potash are non-acid phosphates with potash. They are not potassium phosphate.

SULFATE OF POTASH (COMMERCIAL POTASSIUM SULFATE)

Sulfate of potash is a potash salt containing not less than forty-eight per cent (48%) of potash (K_2O), chiefly as sulfate, and not more than two and one-half per cent (2.5%) of chlorine.

SULPHATE OF POTASH-MAGNESIA

Sulfate of potash-magnesia is a potash salt containing not less than twenty-five per cent (25%) of potash (K_2O), nor less than twenty-five per cent (25%) of sulfate of magnesia, and not more than two and one-half (2.5%) of chlorine.

SUPERPHOSPHATE

Superphosphate is a cured mixture of rock phosphate and sulfuric acid and/or phosphoric acid. The grade shall always be used as a prefix to the name. Example: 16% Superphosphate. The use of the term Acid Phosphate is discontinued.

TANKAGE

Tankage (without qualification) is the rendered, dried, and ground by-product, largely meat and bone from animals (slaughtered or that have died otherwise).

UNIT OF PLANT FOOD

A unit of plant food is twenty (20) pounds, or one per cent (1%) of a ton.

UNLEACHED WOOD ASHES

Unleached wood ashes are ashes from burned unleached wood that have had no part of their plant food removed and that contain four per cent (4%) or more of water-soluble potash (K_2O).

INTERPRETATIONS

ACTIVITY OF WATER-INSOLUBLE NITROGEN IN FERTILIZERS

The alkaline and neutral permanganate methods distinguish between the better and the poorer sources of water-insoluble nitrogen; they do not show the percentage availability of the material. The available nitrogen of any product is measured only by carefully conducted vegetation experiments.

(a) The methods shall be used on mixed fertilizers containing water-insoluble nitrogen amounting to three-tenths of one per cent (0.3%) or more of the weight of the material. If a total nitrogen exceeds the minimum guarantee and is accompanied by a low activity of the insoluble nitrogen, the over-run shall be taken into consideration in determining the classification of the water-insoluble nitrogen.

(b) The water-insoluble nitrogen in mixed fertilizers showing an activity below fifty per cent (50%) by the alkaline method, and also below eighty per cent (80%) by the neutral method, shall be classed as inferior. This necessitates the use of both methods, also the provision as to over-run in (a), before classifying as inferior.

AMOUNT OF CHLORINE PERMISSIBLE IN FERTILIZERS IN WHICH THE POTASH IS CLAIMED AS SULPHATE

Chlorine in mixed fertilizers in which the potash is claimed as sulfate shall not exceed one-half of one per cent (0.5%) more than what is called for in the minimum potash content based on the definition for sulfate of potash formulated by the committee. Calculate as follows: 0.05 times the percentage of potash found plus 0.5.

BRAND NAME TO INCLUDE ANALYSIS OR GRADE OF FERTILIZER

The analysis or grade of a fertilizer should be included with its brand name, and so used by the manufacturer on sacks and in printed literature and by the control official in his reports and publications.

FERTILIZER FORMULA

A fertilizer formula shall express the quantity and grade of the crude stock materials used in making a fertilizer mixture. For example: 800 pounds of 16 per cent superphosphate, 800 pounds of tankage (7.40 nitrogen and 9.15 total phosphoric acid), and 400 pounds of sulphate of potash-magnesia (twenty-six per cent (26%), potash).

FINELY GROUND AS APPLIED TO BASIC PHOSPHATE SLAG

Finely ground in the definition of basic phosphate slag shall refer to actual size of particles as determined by the use of standard sieves, as follows: seventy per cent (70%) or more shall pass a 100-mesh, and ninety per cent (90%) or more shall pass a 50-mesh sieve.

FORM OF NITROGEN IN CALCIUM CYANAMIDE

The nitrogen in calcium cyanamide shall be considered as being of organic nature.

THE TERM LIME AS APPLIED TO FERTILIZERS

The term lime shall not be used in the registration, labelling, or guaranteeing of fertilizers or fertilizing materials, unless the lime is in a form to neutralize soil acidity, such as the oxide, hydroxide, or carbonate, or equivalent magnesia compounds.

ORDER OF TERMS

The order of terms in mixed fertilizers shall be nitrogen first, phosphoric acid second, and potash third.

NAME OF A FERTILIZER MATERIAL USED AS THE BRAND NAME OR PART OF THE
BRAND NAME OF A MIXED FERTILIZER

When the name of a fertilizer material is used as part of the brand name of a mixed fertilizer, as for example blood, bone or fish, the nitrogen or phosphoric acid shall be derived from or supplied entirely by the material named. When the name of a fertilizer material is used as a brand or as part of a brand and the nitrogen and phosphoric acid is not supplied by the material named, the word brand shall follow the name of the material. Example: Fish Brand Fertilizer.

STATEMENT OF GUARANTEE

The statement of guarantee of mixed fertilizers shall be given in whole numbers.

REGISTRATIONS

LATE REGISTRATIONS FOR 1933

To the brands registered for 1933 in our last report should be added:

Ashcraft-Wilkinson Co., Atlanta, Ga.

Monarch Brand Prime Cottonseed Meal

Joseph Breck & Sons Corp., 85 State St., Boston, Mass.

Breck's Rams Head Brand Sheep Manure

Perkins Oil Co., Memphis, Tenn.

Goldenrod Brand 41% Protein Cottonseed Meal

Maurice Pincoffs Co., Houston, Texas

Maurice Pincoffs Company 43% Cottonseed Meal

REGISTRATIONS FOR 1934

For 1934, 61 firms and individuals registered 324 brands of fertilizers at this Station for sale in this State. As required by statute the brands so registered are listed as follows:

The Acme Guano Co., Baltimore, Md.

Acme 4-8-4

Acme 4-8-10

Acme 5-8-5

Acme 5-8-7

Acme 7-6-6

Ground Bone

Sulphate of Ammonia

Superphosphate

6% Tankage

Agrico for Tobacco 6-3-6

Agrico for Truck 5-10-5

Double A Tobacco Fertilizer 5-3-5

Sanderson's Formula B 4-8-7

American Cyanamid Co., 535 Fifth Ave., New York City

Aero Cyanamid

Ammo-Phos 11-48-0

Ammo-Phos 16-20-0

American Agricultural Chemical Co., West Haven, Conn.

AA Aroostook Potato Manure 5-8-7

AA Corn Favorite 3-10-4

AA Double Strength Fertilizer 8-16-14

AA General Crop Fertilizer 2-10-2

AA Hi-Grade Tobacco Manure 6-3-6

AA Monarch Fertilizer 4-8-4

AA Peerless Fertilizer 4-8-7

AA Prolific 10% Potash Fertilizer 2-8-10

AA Superphosphate 16%

AA Tobacco Starter 5-5-15

AA Top Dresser 7-6-6

AAC Castor Pomace

AAC Dry Ground Fish

AAC Fine Ground Bone

AAC Ground Tankage

AAC Muriate of Potash

AAC Pulverized Sheep & Goat Manure

AAC Sulphate of Ammonia

Agrico for Corn 3-10-6

Agrico for Lawns, Trees and Shrubs 7-6-6

Agrico for New England 4-8-10

Agrico for Potatoes and Vegetables 5-8-7

Apothecaries Hall Co., Waterbury, Conn.

Bone Meal 2.47%

Bone Meal 3.70%

Bone and Meat Tankage

Calnitro

Castor Pomace

Cotton Hull Ashes

Dry Ground Fish

Liberty Domestic Sheep Manure

Liberty High Grade Corn 2-12-4

Liberty High Grade Market Gardeners 5-8-7

Liberty High Grade Tobacco Manure 7-3-7

Liberty Market Gardeners Special 4-8-4

Liberty Onion Special (Potash as Sulphate) 4-8-7

Liberty Potato & General Crops 4-8-10

Liberty Special Fertilizer for Fruit 7-8-6

Liberty Special Fertilizer For Lawn, etc. 4-4-0

Liberty Tobacco Special 5-3-5

Liberty Top Dresser for Grass and Grain 8-8-8

Nitrate of Potash
 Sheep and Goat Manure
 Special Mixture 5-10-5
 Super Phosphate 16%
 Tankage 7.40%
 Tankage 10%
 Windsor Fish, Bone and Potash 3-10-4
 Windsor High Grade Market Garden-
 ers 5-8-7
 Windsor Market Gardeners Special
 4-8-4
 Windsor Potato and General Crops
 4-8-10
 Windsor Potato and Market Gardeners
 Special 4-8-7 (Potash as Muriate)
 Windsor Special Fertilizer for Fruit
 7-8-6

**Armour Fertilizer Works, 120 Broad-
 way, New York City**

Armour's Big Crop Fertilizers 2-10-2
 Armour's Big Crop Fertilizers 4-8-4
 Armour's Big Crop Fertilizers 4-8-7
 Armour's Big Crop Fertilizers 5-8-7
 Armour's Big Crop Fertilizers Tobac-
 co Special 5-3-5
 Armour's Big Crop Fertilizers 6-11-10
 Armour's Big Crop Fertilizers 7-6-6
 Armour's Big Crop Fertilizers—16%
 Superphosphate
 Armour's Bone Meal
 Armour's Raw Bone Meal
 Armour's Vert The Green Colored
 Plant Food in the Green Bag 5-8-6
 Castor Pomace
 Sheep and Goat Manure

Ashcraft-Wilkinson Co., Atlanta, Ga.
 Helmet Brand Prime Cotton Seed Meal

**Associated Seed Growers, Inc., 205
 Church St., New Haven, Conn.**

Acid Phosphate
 Clark's Special Mixture for General
 Use 3-8-4
 Clark's Special Mixture with 6%
 Potash 3-8-6
 Clark's Tip Top Brand 4-8-7
 Nitrate of Soda, Champion Brand

**Atkins & Durbrow, Inc., 165 John St.,
 New York City**
 Driconure

**The Baker Castor Oil Co. of Delaware,
 120 Broadway, New York City**
 Castor Pomace

**Barrett Co., 40 Rector St., New York
 City**

Arcadian Nitrate of Soda
 Arcadian Sulphate of Ammonia
 Sulphate of Ammonia

**F. A. Bartlett Tree Expert Co., Stam-
 ford, Conn.**

Bartlett Green Tree Food 6-7-4

**Berkshire Chemical Co., Bridgeport,
 Conn.**

Berkshire 3-8-4 Fertilizer
 Berkshire 3-10-6 Fertilizer
 Berkshire Castor Pomace
 Berkshire Complete Fertilizer 2-12-2
 Berkshire Complete Tobacco Fertilizer
 4-3-5
 Berkshire Dry Ground Fish
 Berkshire Fine Ground Bone
 Berkshire Golf Green Fertilizer 8-5-2
 Berkshire Grass Special Fertilizer 6-6-5
 Berkshire High Grade Tobacco Fer-
 tilizer 5-3-6
 Berkshire Long Island Special Fer-
 tilizer 4-8-7
 Berkshire Market Garden Fertilizer
 4-8-4
 Berkshire Potato and Garden Special
 Fertilizer 5-8-7
 Berkshire Steamed Bone Meal
 Berkshire Superphosphate 16%
 Berkshire Tobacco Special Fertilizer
 6-3-7
 Berkshire Tobacco Starter Fertilizer
 4-4-15
 Berkshire Truck Fertilizer 4-8-5
 Ground Tankage

Bisbee Linseed Co., Philadelphia, Pa.

Bisbee Brand 34% Protein Pure Old
 Process Linseed Meal

**C. E. Buell, Inc., 6 Beacon St., Boston,
 Mass.**

Two-In-One Peat—Poultry Manure

**Chilean Nitrate Sales Corp., 120 Broad-
 way, New York City**

Champion Brand Chilean Nitrate of
 Soda
 Nitrate of Potash
 Standard Chilean Nitrate of Soda

**The Connecticut Fat Rendering and
 Fertilizer Corp., West Haven,
 Conn.**
 Tankage

Consolidated Rendering Co., 178 Atlantic Ave., Boston, Mass.
 Ammo Phos A
 Castor Pomace
 Cottonseed Meal
 Corenco 2-10-2 Bone Brand
 Corenco 3-10-4 Animal Brand
 Corenco 4-8-4 Corn and Vegetable
 Corenco 4-8-7 Market Garden
 Corenco 4-8-10 Potato Grower
 Corenco 4-12-4 Complete Manure
 Corenco 5-3-5 Tobacco Grower
 Corenco 5-8-7 General Crop Manure
 Corenco 5-8-10 Peerless Potato
 Corenco 6-3-6 Special Tobacco Grower
 Corenco 7-3-7 Super Tobacco Grower
 Corenco 7-6-6 Top Dressing
 Corenco 8-16-14 Two in One
 Corenco High Grade Tankage
 Corenco Sheep Manure
 Dry Ground Fish
 Ground Bone 2.05%
 Ground Bone 2.47%
 Ground Tankage 7.41%
 High Grade Tankage 10%
 Lowell 3-10-4 Animal Brand A High Grade Manure for All Crops
 Lowell 4-8-4 Corn and Vegetable
 Lowell 4-8-7 Old General Crop Manure for Potatoes and Market Garden Crops
 Lowell 4-8-10 Potato Grower
 Lowell 5-8-7 Market Garden Manure
 Lowell 5-8-10 Aroostook Special for Potatoes
 Lowell 7-6-6 Top Dressing
 Muriate of Potash
 Nitrate of Potash
 Springfield 5-5-5 Lawn and Shrub Fertilizer
 Sulphate of Ammonia
 Superphosphate 16%

Davey Tree Expert Co., Kent, Ohio
 Davey Shredded Cattle Manure 2-2-2
 Davey Tree Food 10-3-3

Eastern States Farmers' Exchange, Springfield, Mass.
 Eastern States 0-14-6
 Eastern States 4-8-8
 Eastern States 4-10-6
 Eastern States 4-12-4
 Eastern States 4-16-20
 Eastern States 5-5-15 Tobacco
 Eastern States 6-8-6
 Eastern States 6-15-9
 Eastern States 8-4-8 Tobacco
 Eastern States 8-16-16
 Eastern States 8-16-16 Low Chlorine Special

Eastern States 8-24-8
 Eastern States 10-5-10 Tobacco
 Eastern States 12-4-4
 Eastern States 12-16-12
 Eastern States Calnitro
 Eastern States Castor Pomace
 Eastern States Dry Ground Fish
 Eastern States Ground Steamed Bone
 Eastern States Muriate of Potash
 Eastern States Nitrate of Potash
 Eastern States Precipitated Bone
 Eastern States Sulphate of Ammonia
 Eastern States Sulphate of Potash
 Eastern States 16% Superphosphate
 Eastern States 32% Superphosphate
 Urea

Ed. Eggert, 208 State St., Hartford, Conn.

Diamond EE Cotton Hull Ashes

Thomas W. Emerson Co., 215 State St., Boston, Mass.

Emerson's English Formula Lawn and Garden Dressing 5-7-2

Emporia Elevator and Feeding Co., Emporia, Kansas

"Big Sheep" Brand Pulverized Sheep Manure

Ford Motor Co., Dearborn, Michigan

Ford Ammonium Sulphate

L. T. Frisbie Co., New Haven, Conn.

Frisbie's Bone Meal

Goulard and Olena, Inc., 140 Liberty St., New York City

G. & O. Lawn, Garden and Flower Fertilizer 5-8-5

J. B. Greens Formula 10-3-2

The Dr. Heinz Co., College Hill Station, Cincinnati, Ohio

Heinz Odorless Bone Meal

Paul M. Hubbard and Co., Bristol, Conn.

Hubbard's Special Lawn Food 10-6-4

Humphreys-Godwin Co., Memphis, Tenn.

Bull Brand Cottonseed Meal

Dixie Brand Cottonseed Meal

International Agricultural Corp., 38 Chauncy St., Boston, Mass.

Caribee 5-10-10

Caribee 10-16-20

International 4-8-4
International 5-8-7

Spencer Kellogg & Sons, Inc., Buffalo, N. Y.

Castor Pomace
Kellogg's 32% Protein Pure Old
Process Linseed Meal
Kellogg's 37% Protein Pure Old
Process Linseed Meal

L. B. Lovitt & Co., 1005 Falls Bldg., Memphis, Tenn.

"Lovit Brand" 41% Protein Cottonseed Meal

Millane Nurseries and Tree Experts Co., Cromwell, Conn.

Millane Shade Tree Food 8-8-4

The Miller Fertilizer Co., Baltimore, Md.

Lan-Fer Special 8-6-2
Miller Harvest Brand 2-12-4
Miller Harvest Brand 4-6-10
Miller Harvest Brand 4-8-4
Miller Harvest Brand 5-8-7
Miller Harvest Brand 7-6-6
Miller Harvest Brand 16% Superphosphate

Natural Guano Co., Aurora, Illinois

"Sheep's Head" Pulverized Sheep Manure

N. V. Potash Export My., Inc., 19 West 44th St., New York City

Muriate of Potash 48%
Muriate of Potash 60%
Sulphate of Potash
Sulphate of Potash Magnesia

Old Deerfield Fertilizer Co., Inc., South Deerfield, Mass.

Old Deerfield 5-3-5 Complete Tobacco
Old Deerfield 6-3-7 Complete Tobacco
Old Deerfield Cotton Hull Ashes
Old Deerfield Dry Ground Fish
Valley Brand 4-8-4

Olds & Whipple, Inc., Hartford, Conn.

Luxura 5-8-6
Olds & Whipple's 3-10-4 Corn Special Fertilizer
Olds & Whipple's 4-8-4 Market Garden Fertilizer
Olds & Whipple's 4-8-7 Potato and General Purpose Fertilizer

Olds & Whipple's 5-3-5 Complete Tobacco Fertilizer

Olds & Whipple's 5-4-15 High Grade Tobacco Starter and Potash Compound

Olds & Whipple's 5-8-7 High Grade Potato and Vegetable Fertilizer

Olds & Whipple's 6-3-5 Blue Label Tobacco Fertilizer (Potash derived from Cottonhull Ashes)

Olds & Whipple's 6-3-6 Blue Label Tobacco Fertilizer

Olds & Whipple's 8-6-6 Top Dressing and Grass Fertilizer

Olds & Whipple's Bone Meal

Olds & Whipple's Cotton Hull Ashes

Olds & Whipple's Dry Ground Fish

Olds & Whipple's Ground Tankage

Olds & Whipple's Nitrate of Potash

Olds & Whipple's Sulphate of Ammonia

Olds & Whipple's Superphosphate 16%

Wilcox 3-10-4 Corn Special Fertilizer

Wilcox 4-8-4 Market Garden Fertilizer

Wilcox 4-8-7 Potato and General Purpose Fertilizer

Wilcox 8-6-6 Top Dresser Fertilizer

Outpost Nurseries, Inc., Ridgefield, Conn.

Outpost Plant Food 8-5-2

Pedigreed Seed Co., Inc., 74 Reade St., New York City

Laguma Special Turf Fertilizer 5-8-6

Maurice Pincoffs Co., 422 Cotton Exchange Bldg., Houston, Texas

Maurice Pincoffs Company 41% Cottonseed Meal

Plantspur Products Co., Ridgefield, N. J.

Plantspur Fertilizer 3-3-2

The Frank S. Platt Co., 450 State St., New Haven, Conn.

Platco Special 4-8-7

Platt's Special Lawn Fertilizer 10-5-5

Premier Poultry Manure Co., 327 South LaSalle St., Chicago, Illinois

Premier Brand Pulverized Poultry Manure

Pulverized Manure Co., Chicago, Illinois

Wizard Brand Cattle Manure

Wizard Brand Pulverized Sheep Manure

The Rogers & Hubbard Co., Portland, Conn.

Dry Ground Fish
 Golf Course Fertilizer 8-6-2
 Gro-Fast 5-6-6
 Ground Bone
 Hubbard's All Soils All Crops Fertilizer 4-8-4
 Hubbard's "Bone Base" Oats and Top Dressing
 Hubbard's "Bone Base" Seeding Down Fertilizer
 Hubbard's "Bone Base" Soluble Corn Manure
 Hubbard's "Bone Base" Soluble Potato Manure
 Hubbard's "Bone Base" Soluble Tobacco Manure
 Hubbard's Corn and Grain Fertilizer 2-12-4
 Hubbard's Climax Tobacco Brand 5-3-5
 Hubbard's High Potash 2-8-10
 Hubbard's Potato Fertilizer 5-8-7
 Hubbard's Tobacco Grower Vegetable Formula 6-3-6
 Pulverized Sheep and Goat Manure
 Pure Raw Knuckle Bone Flour
 Red H 4-8-4
 Red H 4-8-7
 Red H 4-8-8
 Red H 5-8-7
 Red H 7-6-6
 Red H 8-16-14
 Strictly Pure Fine Bone
 Superphosphate 16%

F. Rynveld and Sons, 55 West 26th St., New York City

Rynveld's Bone Meal Fertilizer

O. M. Scott and Sons Co., Marysville, Ohio

Scott's Turf Builder 10-6-4

Sewerage Commission of the City of Milwaukee, Milwaukee, Wisconsin

Milorganite

M. L. Shoemaker & Co., Inc., Philadelphia, Pa.

Shoemaker's "Swift Sure" Tobacco Starter 4-10-0

Standard Wholesale Phosphate and Acid Works, Inc., 1600 Continental Bldg., Baltimore, Md.

Standard United States 3-8-10
 Standard United States 4-8-4
 Standard United States 4-8-7
 Standard United States 5-8-7

Standard United States 5-8-10
 Standard United States 5-10-5
 Standard United States 7-6-6
 Standard United States Nitrate of Soda
 Standard United States Sheep Manure
 Standard United States Steamed Bone Meal
 Standard United States Sulphate of Potash
 Standard United States 16% Superphosphate

Summers Fertilizer Co., Inc., Baltimore, Md.

3-12-6 Fertilizer
 4-8-4 Fertilizer
 4-8-7 Fertilizer
 5-8-7 Fertilizer
 5-10-5 Fertilizer
 8-8-8 Fertilizer
 Bone Meal
 Sulphate of Ammonia
 Summer's Genuine Venezuelan Goat Manure
 16% Superphosphate

Swift and Co. Fertilizer Works, Baltimore, Md.

Bone Meal Fertilizer
 Vigoro 4-12-4

Synthetic Nitrogen Products Corp., 285 Madison Ave., New York City

Nitrophoska 15-30-15
 Urea (Floranid-Urea)

Tennessee Corp., Lockland, Ohio

Loma 5-10-4
 Soil-Prep 4-2-2

I. P. Thomas & Son Co., Philadelphia, Pa.

Animal Tankage
 High Grade Potato Manure 4-8-10
 I. P. Thomas 4-8-7
 I. P. Thomas 5-8-7
 Royal Guano 4-8-5
 16% Superphosphate
 Tip Top Fertilizer 3-10-6
 Truckers High Grade Guano 4-8-4

Tobacco By-Products and Chemical Corp., Louisville, Kentucky

"Black Leaf" Tobacco-Stem Meal

Truempy, Fasey and Besthoff, Inc., 22 E. 40th St., New York City

Bone Meal

Virginia-Carolina Chemical Corp., Carteret, N. J.

Bloomaid (New Process) 4-10-3
 V-C Aroostook Potato Grower 5-8-7
 V-C Fairway Fertilizer (New Process) 6-6-4
 V-C Tip-Top Top Dresser 7-6-6
 V-C XXXX Fish and Potash 4-8-5

Walker-Gordon Laboratory Co., Inc., Plainsboro, N. J.

Bovung

Thomas Wood & Sons, Inc., 12-14 Midland Ave., Montclair, N. J.

Woodgro Dehydrated Cow Manure

F. H. Woodruff & Sons, Milford, Conn.

Woodco 10-6-4 Lawn Food

INSPECTION OF 1934

The Station Agent has visited 78 towns and villages in the state and has drawn 335 official samples of fertilizer, including all the registered brands that could be found. The classification of these and of other samples analyzed is given in the summary.

CLASSIFICATION OF FERTILIZER MATERIALS, 1934

	Number samples	Page
I. <i>Containing Chiefly Nitrogen</i>		
Nitrate of Soda	6	19
Calcium nitrate	2	19
Calurea	1	19
Urea	2	19
Cyanamid	1	19
Ammonium sulfate	7	19
Castor pomace	13	21
Cottonseed meal	91	21
Linseed Meal	4	21
II. <i>Containing Chiefly Phosphoric Acid</i>		
Superphosphate	16	23
Precipitated bone phosphate	4	23
III. <i>Containing Chiefly Potash</i>		
Muriate of Potash	7	26
Sulfate of potash	3	26
Cottonhull ashes	52	26
IV. <i>Containing Nitrogen and Potash</i>		
Nitrate of potash	14	27
Nitrate of potash and soda	1	27
Ground tobacco stems	2	27
V. <i>Containing Nitrogen and Phosphoric Acid</i>		
Dry ground fish	31	29
Tankage	12	29
Ground bone	33	29
VI. <i>Mixed Fertilizers</i>		
Commercial mixtures	184	34
Special and home mixtures	22	35
VII. <i>Miscellaneous</i>		
Sheep manure	20	53
Lime	15	53
Other miscellaneous	41	53
Check meals and fertilizers	24	58
Total	608	

I. RAW MATERIALS CHIEFLY VALUABLE FOR NITROGEN

NITRATE OF SODA AND OTHER NITROGENOUS MATERIALS

Three official samples of nitrate of soda were examined and all met or exceeded the guaranties. Three samples were examined for purchasers.

Two official samples of calcium nitrate also were found to meet their guaranties as did also two official samples of urea and one of cyanamid.

Seven official samples of ammonium sulphate were examined and no deficiencies were found.

One unofficial sample of calurea was examined for the Tobacco Station. It was guaranteed to contain 34 per cent of nitrogen and 34.30 per cent was found.

Analyses of official samples of these products are given in Table 1.

TABLE 1. ANALYSES OF NITRATE OF SODA AND OTHER NITROGENOUS MATERIALS

Station No.	Manufacturer or jobber	Sampled from stock of	Per cent nitrogen	
			Found	Guaranteed
Nitrate of Soda				
5191	Champion. Associated Seed Growers, Inc., New Haven	Associated Seed Growers, Inc., Milford	16.00	16.00
5178	Arcadian. The Barrett Co., New York City	Cheshire Reformatory, West Cheshire	16.02	16.00
5161	Champion. Chilean Nitrate Sales Corp., New York City	H. D. Peters, Highwood ...	16.10	16.00
Calcium Nitrate (Nitrate of Lime)				
5248	Calnitro. Apothecaries Hall Co., Waterbury	Julius Lewis, Southington ..	20.90	20.50
5223	Eastern States Calnitro, Eastern States Farmers' Exchange, Springfield, Mass.	A. L. Lockwood, Clinton ...	20.60	20.50
Urea				
5602	Eastern States Farmers' Exchange, Springfield, Mass.	E. W. Woolam, Warehouse Point	46.00	46.00
5207	Floranid-Urea. Synthetic Nitrogen Products Corp., New York City	Olds & Whipple, Inc., Hartford	46.20	46.00
Cyanamid				
5166	Aero. American Cyanamid Co., New York City	H. D. Peters, Highwood ...	22.20	22.00
Sulphate of Ammonia				
5213	AAC. American Agricultural Chemical Co., West Haven	Libner Grain Co., Norwalk	20.82	20.56
5165	Arcadian. Barrett Co., New York City	H. D. Peters, Highwood....	20.74	20.56
5194	Barrett Co., New York City	T. W. Ryan, Stratford	20.60	20.56
5174	Consolidated Rendering Co., Boston, Mass.	L. T. Frisbie Co., New Haven	20.74	20.50
5253	E.S. Eastern States Farmers' Exchange, Springfield, Mass.	Julius Lewis, Southington ..	21.06	20.50
5209	Ford. Ford Motor Co., Dearborn, Mich.	O'Meara Motor Co., East Hartford	21.00	20.80
5204	Olds & Whipple's. Olds & Whipple, Inc., Hartford ..	F. T. Blish Hardware Co., So. Manchester	20.76	20.56

VEGETABLE PRODUCTS USED AS SOURCES OF NITROGEN

Seven official samples of castor pomace were examined. No deficiencies in nitrogen were found; some samples exceeded guaranties considerably.

Of seven official samples of cottonseed meal there were three showing deficiencies in nitrogen of more than 0.1 per cent but none exceeded 0.2 per cent.

No official samples of linseed oil meal were drawn but four samples were examined for purchasers.

Six purchasers' samples of castor pomace and 84 such samples of cottonseed meal were analyzed.

Analyses of official samples of castor pomace and cottonseed meal are given in Table 2.

TABLE 2. ANALYSES OF CASTOR POMACE AND COTTONSEED MEAL

Station No.	Manufacturer or jobber	Sampled from stock of	Per cent nitrogen	
			Found	Guaranteed
Castor Pomace				
5190	AAC. American Agricultural Chemical Co., West Haven	Factory, West Haven	4.78	4.53
5160	Apothecaries Hall Co., Waterbury	H. D. Peters, Highwood ...	5.72	4.52
5598	The Baker Castor Oil Co., New York City	Olds & Whipple, Inc., East Hartford	5.54	4.50
5198	Berkshire. Berkshire Chemical Co., Bridgeport	Factory, Bridgeport	4.62	4.52
5199	Consolidated Rendering Co., Boston, Mass.	A. E. Shedd, Norwich	5.76	4.52
5240	Eastern States. Eastern States Farmers' Exchange, Springfield, Mass.	H. H. McKnight, Ellington	5.14	4.50
5242	Spencer Kellogg & Sons, Inc., Buffalo, N. Y.	E. D. Woolam, Warehouse Point	4.94	4.52
Cottonseed Meal				
5514	Helmet Brand 41%. Ashcraft-Wilkinson Co., Atlanta, Ga.	E. D. Woolam, Warehouse Point	6.45	6.58
4100	Monarch Brand 43%. Ashcraft-Wilkinson Co., Atlanta, Ga.	L. B. Haas & Co., Hartford	6.82	6.88
5549	Consolidated Rendering Co., Boston, Mass.	L. T. Frisbie Co., New Haven	6.67	6.50
4101	Bull Brand 43%. Humphreys-Godwin Co., Memphis, Tenn.	L. B. Haas & Co., Hartford	6.61	6.88
4102	Bull Brand 43%. Humphreys-Godwin Co., Memphis, Tenn.	L. B. Haas & Co., Hartford	6.69	6.88
5477	Dixie Brand 41%. Humphreys-Godwin Co., Memphis, Tenn.	Thomaston Supply Co., Thomaston	6.60	6.58
5625	Maurice Pincoffs Co. 41% Maurice Pincoffs Co., Houston, Texas	Olds & Whipple, Inc., Hartford	6.67	6.56

II. RAW MATERIALS CHIEFLY VALUABLE FOR
PHOSPHORIC ACID

SUPERPHOSPHATE

Superphosphate is a raw material of basic importance in the fertilizer industry. It is made by a process originated by Liebig in 1840. In the United States superphosphate is made by treating phosphate rock with sulfuric acid. The finished product contains 16 per cent of available phosphoric acid. "Double superphosphate" is a similar product made by so treating phosphate rock that practically all of the calcium is converted into mono-calcium phosphate. Double phosphate contains 32 per cent of available phosphoric acid.

Fifteen official samples of superphosphate and one of the 32 per cent grade (double superphosphate) were analyzed. All met or exceeded guaranties for available phosphoric acid except in one case. In that the deficiency was less than 0.2 per cent and not considerable.

Analyses are given in Table 3.

PRECIPITATED BONE PHOSPHATE

Precipitated bone phosphate is a by-product in the manufacture of glue from bones. The phosphoric acid in this material is chiefly in the form of dicalcium phosphate.

One official sample was examined and the available phosphoric acid found to be considerably in excess of the guaranty. Three samples were examined for purchasers.

Analyses of the official samples are included in Table 3.

TABLE 3. ANALYSES OF SUPERPHOSPHATE, ETC.

Station No.	Manufacturer or wholesale dealer	Dealer or purchaser	Phosphoric acid			
			Citrate insoluble	Total	Found	Guaranteed
			%	%	%	%
Superphosphate						
5200	Acme Guano Co., Baltimore, Md.	A. E. Shedd, Norwich	0.44	16.53	16.09	16.00
5180	AA 16%. American Agricultural Chemical Co., West Haven	Bristol Supply Co., Bristol	0.90	16.74	15.84	16.00
5246	Apothecaries Hall Co., Waterbury	Factory, East Windsor	0.43	16.51	16.08	16.00
5653	Armour's Big Crop Fertilizers 16%. Armour Fertilizer Works, New York City	C. A. Cowles, Plantsville	0.70	17.40	16.70	16.00
5652	Associated Seed Growers, Inc., New Haven	Chas. T. Proctor, Milford	0.27	16.99	16.72	16.00
5195	Berkshire 16%. Berkshire Chemical Co., Bridgeport	T. W. Ryan, Stratford	0.37	16.82	16.45	16.00
5177	Consolidated Rendering Co., Boston, Mass.	Cheshire Reformatory, West Cheshire..	0.41	16.59	16.18	16.00
5222	Eastern States 16%. Eastern States Farmers' Exchange, Springfield, Mass.	A. L. Lockwood, Clinton	0.70	17.11	16.41	16.00
5588	E.S. 32%. Eastern States Farmers' Exchange, Springfield, Mass.	C. A. Congdon, Middletown	0.35	32.48	32.13	32.00
5543	Miller Harvest Brand 16%. The Miller Fertilizer Co., Baltimore, Md.	C. W. Campbell & Co., Westerly	0.55	17.60	17.05	16.00
5203	Olds & Whipple's. Olds & Whipple, Inc., Hartford	F. T. Blish Hardware Co., So. Manchester	0.21	17.01	16.80	16.00

TABLE 3. ANALYSES OF SUPERPHOSPHATE, ETC.—(Concluded)

Station No.	Manufacturer or wholesale dealer	Dealer or purchaser	Phosphoric acid			
			Citrate insoluble	Total	"Available"	
					Found	Guaranteed
5187	The Rogers & Hubbard Co., Portland Standard United States 16%. Standard Wholesale Phosphate and Acid Works, Baltimore, Md. 16%. Summers Fertilizer Co., Baltimore, Md. 16%. Summers Fertilizer Co., Baltimore Md. 16%. I. P. Thomas & Son Co., Philadelphia, Pa.	Factory, Portland	%	%	%	
5192			0.16	17.05	16.89	16.00
5196		T. W. Ryan, Stratford	0.39	16.81	16.42	16.00
5541		Stored at dock, East Bridgeport	1.64	17.65	16.01	16.00
5162		Litchfield County Co-op. Assoc., Torrington	0.77	17.28	16.51	16.00
		H. D. Peters, Highwood	0.56	17.62	17.06	16.00
5239	Precipitated Bone Phosphate Eastern States Farmers' Exchange, Spring- field, Mass.	H. H. McKnight, Ellington	0.59	42.20	41.61	38.00

III. RAW MATERIALS CHIEFLY VALUABLE FOR POTASH

POTASH SALTS

Six official samples of muriate of potash and three of sulphate of potash have been examined and all found to meet guaranties except in one instance, 5220, where a deficiency of 0.73 per cent was shown. One sample of muriate of potash was analyzed for a purchaser.

Analyses of official samples are given in Table 4.

COTTONHULL ASHES

Cottonhull ashes are used to a considerable extent as a source of potash, especially in mixtures for tobacco. Three official samples were analyzed as follows:

5597. Olds and Whipple, Inc., Hartford; sample taken at the factory. Potash found, 41.06%, phosphoric acid, 2.11%.

5516. Apothecaries Hall Co., Waterbury; sample taken at the factory. Potash found, 41.96%, phosphoric acid, 2.83%.

5247. Ed. Eggert, Hartford; sample taken at the factory. Potash found, 42.38%; phosphoric acid, 2.48%.

Because of their variable composition cottonhull ashes are generally sold on a unit basis.

Forty-nine samples of this material were submitted by purchasers for analysis. Potash ranged from 22 to 43 per cent. Phosphoric acid varied between 1.8 and 6.3 per cent but was generally within the narrower limits of 2 to 3 per cent.

TABLE 4. ANALYSES OF POTASH SALTS

Station No.	Manufacturer or jobber	Sampled from stock of	Potash	
			Found	Guaranteed
	Muriate of Potash		%	%
5188	American Agricultural Chemical Co., West Haven	Factory, West Haven	50.46	50.00
5551	Consolidated Rendering Co., Boston, Mass.	L. T. Frisbie Co., New Haven	50.17	50.00
5220	Eastern States. Eastern States Farmers' Exchange, Springfield, Mass.	Paul W. Caldwell, New Milford	59.27	60.00
5595	Eastern States. Eastern States Farmers' Exchange, Springfield, Mass.	H. H. McKnight, Ellington	61.33	60.00
5163	N. V. Potash Export My., Inc., New York City	H. D. Peters, Highwood ..	50.83	48.00
5250	N. V. Potash Export My., Inc., New York City	Julius Lewis, Southington..	62.26	60.00
	Sulfate of Potash			
5243	Eastern States. Eastern States Farmers' Exchange, Springfield, Mass.	E. D. Woolam, Warehouse Point	49.24	48.00
5241	Standard United States. Standard Wholesale Phosphate and Acid Works, Baltimore, Md.	H. H. McKnight, Ellington	49.76	48.00
5181	N. V. Potash Export My., Inc., New York City	Spencer Bros., Suffield	49.83	48.00

IV. RAW MATERIALS CONTAINING NITROGEN AND POTASH

Four official samples of nitrate of potash and one of tobacco stem meal have been examined and the results are given in Table 5. Potash guaranties were met, but three samples were slightly below guaranties in nitrogen.

Ten samples of nitrate of potash, one of nitrate of potash and soda, and one of tobacco stems were examined for purchasers.

TABLE 5. ANALYSES OF NITRATE OF POTASH, ETC.

Station No.	Manufacturer	Sampled from stock of	Nitrogen		Potash	
			Found	Guaranteed	Found	Guaranteed
			%	%	%	%
5244	Nitrate of Potash					
5210	Apothecaries Hall Co., Waterbury	Factory, East Windsor	12.90	13.00	44.72	44.00
	E.S. Eastern States Farmers' Exchange, Springfield, Mass.	H. H. McKnight, Ellington	12.66	13.00	44.00	44.00
5603	E.S. Eastern States Farmers' Exchange, Springfield, Mass.	E. W. Woolam, Warehouse Point	12.80	13.00	44.00	44.00
5208	Olds & Whipple's. Olds & Whipple, Inc., Hartford	Factory, Hartford	12.76	13.00	44.02	44.00
5599	Ground Tobacco Stems					
	"Black Leaf" Tobacco Stem Meal. Tobacco By-Products and Chemical Corp., Louis- ville, Ky.	Olds & Whipple, Inc., Hartford	1.36	1.16	4.40	4.00

V. RAW MATERIALS CONTAINING NITROGEN AND
PHOSPHORIC ACID

FISH, TANKAGE AND BONE

Seven official samples of dry ground fish were examined and all substantially met or exceeded guaranties. No evidence of adulteration with mineral forms of nitrogen was found. Twenty-four samples were analyzed for purchasers.

Analyses of official samples are given in Table 6.

Twelve official samples of tankage were analyzed. Three, 4332, 5221, and 5169 were bone and meat tankages low in nitrogen and high in phosphoric acid, but all met or exceeded their guaranties. Three other samples, 5201, 5189, and 5249, were considerably deficient in nitrogen and one of them, 5201, was low in phosphoric acid as well.

Analyses are given in Table 7.

Twenty official samples of ground bone were analyzed and thirteen were examined for purchasers. All official samples met or exceeded guaranties in nitrogen, but three 5179, 5654, and 5168 were deficient in phosphoric acid.

Two samples, 5582, Acme Guano Co. and 5212, Standard Wholesale Phosphate and Acid Works, contained large proportions of rock phosphate. There was also some tankage present which kept the mixture within the limits of nitrogen content usually found in bone. A mixture of rock phosphate, bone and tankage is not ground bone and should not be sold as such. The nitrogen of tankage is as valuable as that of bone; but while rock phosphate has proper uses as a fertilizer, it is not commercially as valuable as bone phosphate.

Analyses of official samples are given in Table 8.

TABLE 6. ANALYSES OF DRY GROUND FISH

Station No.	Manufacturer or wholesale dealer	Sampled from stock of	Nitrogen		Phosphoric acid	
			Total found	Total guaranteed	Total found	Total guaranteed
5182	AAC. American Agricultural Chemical Co., West Haven	Geo. S. Phelps & Co., Thompsonville..	% 9.47	% 9.00	% 8.07	% 6.00
5245	Apothecaries Hall Co., Waterbury	Factory, East Windsor	9.42	9.46	7.54	6.00
5167	Berkshire Chemical Co., Bridgeport	Gabriel Dadio, Highwood	9.05	9.04	6.46	6.00
5171	Consolidated Rendering Co., Boston, Mass.	L. T. Frisbie Co., New Haven	9.94	9.46	8.14	6.00
5515	E.S. Eastern States Farmers' Exchange, Springfield, Mass.	E. D. Woolam, Warehouse Point	9.84	9.00	5.80	6.00
5206	Olds & Whipple's. Olds & Whipple, Inc., Hartford	Factory, Hartford	9.42	9.00	8.21	5.00
5546	The Rogers & Hubbard Co., Portland	Factory, Portland	9.85	9.00	7.38	6.00

TABLE 7. ANALYSES OF TANKAGE AND SIMILAR MATERIALS

Station No.	Manufacturer	Sampled from stock of	Nitrogen		Phosphoric acid		Mechanical analysis		Station No.
			Total found	Total guaranteed	Total found	Total guaranteed	Finer than 1.50 inch	Coarser than 1.50 inch	
5201	Tankage 6%, Acme Guano Co., Baltimore, Md.	A. E. Shedd, Norwich	% 5.04	% 6.00	% 4.15	% 9.15	% 46.6	% 53.4	5201
5189	AAC Ground. American Agricultural Chemical Co., West Haven	Factory, West Haven	6.84	7.40	12.02	9.15	42.0	58.0	5189
4332	Bone and Meat. Apothecaries Hall Co., Waterbury	John A. Martin, Wallingford ..	3.70	3.29	23.04	20.00	55.4	44.6	4332
5214	Apothecaries Hall Co., Waterbury	J. B. McArdle, Greenwich ..	8.06	7.40	10.03	9.00	48.5	51.5	5214
5221	Bone and Meat. Apothecaries Hall Co., Waterbury	Knowles-Lombard Co., Guilford	3.75	3.70	23.07	21.00	51.5	48.5	5221
5249	Apothecaries Hall Co., Waterbury	Julius Lewis, Southampton ..	8.37	10.00	9.50	6.00	5249
5193	Ground. Berkshire Chemical Co., Bridgeport	T. W. Ryan, Stratford	9.99	9.87	7.19	6.00	33.0	67.0	5193
5169	Connecticut Fat Rendering and Fertilizer Corp., West Haven	Factory, West Haven	4.16	4.00	20.18	10.47	52.0	48.0	5169
5170	Ground. Consolidated Rendering Co., Boston, Mass.	L. T. Frisbie Co., New Haven ..	8.56	7.41	10.89	9.15	41.0	59.0	5170
5593	Corenco High Grade. Consolidated Rendering Co., Boston, Mass.	John Lugenbuhl, Ellington ..	9.63	8.75	7.97	9.00	23.6	76.4	5593
5205	Olds & Whipple's Ground. Olds and Whipple, Inc., Hartford	F. T. Blish Hardware Co., So. Manchester	7.50	7.40	12.29	9.15	50.6	49.4	5205
5164	Animal. I. P. Thomas & Son Co., Philadelphia, Pa.	H. D. Peters, Highwood	10.32	10.00	4.29	4.50	58.2	41.8	5164

TABLE 8. ANALYSES OF GROUND BONE

Station No.	Manufacturer	Sampled from stock of	Nitrogen		Phosphoric acid		Mechanical analysis		Station No.
			Total found	Total guaranteed	Total found	Total guaranteed	Finer than 1.50 inch	Coarser than 1.50 inch	
5582 ¹	Ground. Acme Guano Co., Baltimore, Md.	Farmers Flour and Grain Co., Stratford	% 2.98	% 2.47	% 24.35	% 22.88	% 39.5	% 60.5	5582
5179	AAC Fine Ground. American Agricultural Chemical Co., West Haven	Bristol Supply Co., Bristol ..	3.65	2.47	21.56	23.00	73.5	26.5	5179
5176	Apothecaries Hall Co., Waterbury	R. W. Hine, Cheshire	4.19	2.47	23.65	22.00	45.0	55.0	5176
5215	Apothecaries Hall Co., Waterbury	J. B. McArdle, Greenwich ..	4.03	3.70	22.31	21.00	56.0	44.0	5215
5544	Armour's. Armour Fertilizer Works, New York City	C. W. Campbell & Co., Westerly	2.88	2.47	24.89	23.00	45.7	54.3	5544
5197	Berkshire Fine Ground. Berkshire Chemical Co., Bridgeport	Factory, Bridgeport	2.73	2.25	28.50	25.00	55.3	44.7	5197
5218	Berkshire Fine Ground. Berkshire Chemical Co., Bridgeport	Silliman Hardware Co., New Canaan	2.35	2.25	29.00	25.00	69.9	30.1	5218
5654	Berkshire Steamed. Berkshire Chemical Co., Bridgeport	Factory, Bridgeport	1.36	0.82	34.08	35.00	81.0	19.0	5654
5168	Ground. Consolidated Rendering Co., Boston, Mass.	Lightborn & Pond, New Haven	2.50	2.05	22.39	22.90	49.8	50.2	5168
5490	E.S. Ground Steamed. Eastern States Farmers' Exchange, Springfield, Mass.	Chas. Greenbacker, Meriden.	2.41	2.50	27.02	23.00	78.2	21.8	5490
5175	Frisbie's. L. T. Frisbie Co., New Haven..	Frank S. Platt Co., New Haven	4.00	3.70	24.51	21.51	38.5	61.5	5175

¹Not straight bone; considerable mineral phosphate present.

TABLE 8. ANALYSES OF GROUND BONE—(Concluded)

Station No.	Manufacturer	Sampled from stock of	Nitrogen		Phosphoric acid		Mechanical analysis		Station No.
			Total found	Total guaranteed	Total found	Total guaranteed	Finer than 1-50 inch	Coarser than 1-50 inch	
5584	Heinz Odorless. The Dr. Heinz Co., Cincinnati, Ohio	F. W. Woolworth Co., New Haven	1.23	1.00	30.94	29.00	81.1	18.9	5584
5202	Olds & Whipple's. Olds & Whipple, Inc., Hartford	Jordon Hardware Co., Willimantic	2.48	2.47	22.87	22.00	56.6	43.4	5202
5183	Strictly Pure Fine. The Rogers and Hubbard Co., Portland	Caldwell & Jones, Hartford ..	4.16	3.29	22.88	20.50	41.4	58.6	5183
5184	Pure Raw Knuckle Bone Flour. The Rogers and Hubbard Co., Portland	Caldwell & Jones, Hartford ..	3.82	3.69	25.95	24.70	87.9	12.1	5184
5185	Ground. The Rogers and Hubbard Co., Portland	Chas. C. Hart Seed Co., Wethersfield	2.81	2.47	24.87	22.85	66.5	33.5	5185
5212 ¹	Standard United States Steamed. Standard Wholesale Phosphate and Acid Works, Baltimore, Md.	Rippe Bros., Westport	3.76	2.47	22.35	22.00	50.9	49.1	5212
5216	Summers Fertilizer Co., Baltimore, Md. ...	Wm. J. Rice, Stamford	2.94	2.47	25.31	22.88	70.6	29.4	5216
5219	Swift and Co. Fertilizer Works, Baltimore, Md.	H. E. Meeker, Danbury	2.46	2.47	25.19	23.00	57.6	42.4	5219
5217	Truempy, Faesy and Besthoff, Inc., New York City	Clap Board Hill Co., New Canaan	2.31	2.25	27.51	27.00	41.5	58.5	5217

¹Not straight bone; considerable mineral phosphate present.

VI. MIXED FERTILIZERS

In this group there are 171 official samples of complete fertilizers, four supplying only nitrogen and phosphoric acid, and one supplying only phosphoric acid and potash, making a total of 176.

Eleven samples were examined for purchasers.

Analyses of official samples are given in Table 9. A general summary of this table is as follows:

Total number of samples	176
Samples deficient in:	
one item	32
two items	5
three items	0
Percentage of samples meeting guaranties in all respects	79
Total guaranties made	523
Guaranties not met:	
nitrogen	22
available phosphoric acid	5
potash	15
Percentage of guaranties met	92
Samples showing commercial deficiencies exceeding \$1.00	
per ton	4
Percentage of samples showing deficiencies exceeding	
\$1.00 per ton	2.3

The proportion of samples substantially meeting guaranties has increased notably in recent years. In 1923 the proportion was only 55 per cent. It has increased gradually since then being 74 to 80 per cent since 1930; and this year it is again nearly 80 per cent.

The proportion of samples showing commercial deficiencies exceeding a value of \$1.00 per ton has decreased. In the period from 1923 to 1929 this proportion varied from 7 to 17 per cent; since 1930 it has not exceeded 3 per cent, and this year it is only a little over 2 per cent.

The samples showing commercial deficiencies in excess of \$1.00 per ton this year are as follows:

No. 5345	Standard Wholesale Phosphate and Acid Works
No. 5357	Summers Fertilizer Co.
No. 5785	Summers Fertilizer Co.
No. 5591	Synthetic Nitrogen Products Corp.

A summary showing the distribution of chemical deficiencies and the percentage of guaranties met in the past year is given in Table 10. The proportion of guaranties met over a period of years is of more significance than for any one year and, therefore, figures are given in the same table for the five year period 1930-1934 inclusive.

QUALITY OF THE INSOLUBLE ORGANIC NITROGEN

The quality of the insoluble organic nitrogen in mixed fertilizers is judged by the so-called "activity" of that portion that is insoluble in water as measured by the alkaline and the neutral permanganate methods. Values of less than 50 per cent and 80 per cent by these respective methods is regarded as indicating nitrogen of inferior quality. Values less than these

have been found in ten samples this year, but in all cases the actual percentage of the insoluble was relatively small, and the percentage of water-soluble nitrogen plus the percentage of active insoluble organic nitrogen practically equalled or exceeded the total nitrogen guaranteed. Hence no question is raised on the matter of quality of the nitrogen.

SPECIAL AND HOME MIXTURES

Twenty-two samples of special mixtures and of home mixed goods have been examined. Seven of these were sampled by the Station agent, the others by the mixers or the purchasers.

Analyses are given in Table 11.

TABLE 9. ANALYSES OF MIXED FERTILIZER

Station No.	Manufacturer and brand	Place of sampling
	Acme Guano Co., Baltimore, Md.	
5417	Acme 4-8-4	New Britain.....
5367	Acme 4-8-10	Norwich.....
5416	Acme 5-8-5	New Britain.....
5366	Acme 5-8-7	Norwich.....
	American Agricultural Chemical Co., West Haven, Conn.	
5299	AA Aroostook Potato Manure 5-8-7	Meriden.....
5284	AA Corn Favorite 3-10-4	Windsor Locks.....
5884	AA Double Strength Fertilizer 8-16-14	West Haven.....
5278	AA General Crop Fertilizer 2-10-2	Bristol.....
5620	AA Hi-Grade Tobacco Manure 6-3-6	Broad Brook.....
5283	AA Monarch Fertilizer 4-8-4	Thompsonville.....
5282	AA Peerless Fertilizer 4-8-7	Suffield.....
5472	AA Prolific 10% Potash Fertilizer 2-8-10	Torrington.....
5649	AA Tobacco Starter 5-5-15	Suffield.....
5280	AA Top Dresser 7-6-6	Bristol.....
5492	Agrico for Corn 3-10-6	Simsbury.....
5285	Agrico for Lawns, Trees and Shrubs 7-6-6 ..	Windsor Locks.....
5279	Agrico for New England 4-8-10	Bristol.....
5476	Agrico for Potatoes and Vegetables 5-8-7 ...	Canaan.....
5651	Agrico for Tobacco 6-3-6	West Haven.....
5369	Agrico for Truck 5-10-5	Lebanon.....
5624	Double A Tobacco Fertilizer 5-3-5	Glastonbury.....
5623	Sanderson's Formula B 4-8-7	Branford.....
	American Cyanamid Co., New York City	
5376	Ammo Phos 11-48-0	Ellington.....
	Apothecaries Hall Co., Waterbury, Conn.	
5317	Liberty High Grade Corn 2-12-4	Greenwich.....
5273	Liberty High Grade Market Gardeners 5-8-7..	West Cheshire.....
5604	Liberty High Grade Tobacco Manure 7-3-7 ..	East Windsor.....
5318	Liberty Market Gardeners Special 4-8-4	Greenwich.....
5517	Liberty Onion Special 4-8-7	
	(Potash as Sulphate)	
5362	Liberty Potato and General Crop 4-8-10	East Windsor.....
5363	Liberty Special Fertilizer for Fruit 7-8-6	Yantic.....
5319	Liberty Special Fertilizer for Lawns, etc, 4-4-0	Greenwich.....

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

Nitrogen					Phosphoric acid			Potash		Station No.
In nitrates	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "Available"	As muriate	Total	
%	%	%	%	%	%	%	%	%	%	
0.00	3.40	0.51	0.22	4.13	0.40	8.91	8.51	4.09	4.09	5417
0.00	3.26	0.65	0.32	4.23	0.35	9.24	8.89	10.68	10.68	5367
0.00	4.06	0.60	0.23	4.89	0.45	8.99	8.54	5.30	5.30	5416
0.00	3.64	1.36	0.26	5.26	0.25	9.31	9.06	7.25	7.25	5366
0.29	3.80	0.18	0.47	4.74	0.25	8.41	8.16	6.65	6.65	5299
0.00	2.80	0.04	0.37	3.21	0.41	10.92	10.51	4.20	4.20	5284
0.00	8.03	0.00	0.13	8.16	0.91	16.96	16.05	13.73	13.73	5884
0.00	1.62	0.13	0.33	2.08	0.49	10.29	9.80	2.62	2.62	5278
0.25	1.72	0.64	3.45	6.06	0.09	3.60	3.51	0.54	6.74	5620
0.27	3.08	0.16	0.40	3.91	0.21	8.56	8.35	4.05	4.05	5283
0.25	3.08	0.20	0.45	3.98	0.23	8.81	8.58	6.90	6.90	5282
0.00	1.82	0.03	0.25	2.10	0.30	8.30	8.00	10.76	10.76	5472
0.59	2.48	0.80	1.03	4.90	0.29	6.23	5.94	1.33	14.46	5649
0.20	6.32	0.16	0.36	7.04	0.15	7.10	6.95	5.77	5.77	5280
0.00	2.52	0.23	0.37	3.12	0.43	11.66	11.23	5.72	5.72	5492
0.51	5.92	0.12	0.45	7.00	0.19	7.63	7.44	5.66	5.66	5285
0.21	3.20	0.24	0.49	4.14	0.24	9.10	8.86	9.82	9.82	5279
0.36	3.82	0.22	0.48	4.88	0.24	8.74	8.50	7.07	7.07	5476
0.50	0.88	1.08	3.60	6.06	0.23	3.65	3.42	0.46	6.55	5651
0.26	3.84	0.26	0.50	4.86	0.30	11.41	11.11	5.04	5.04	5369
0.48	1.48	0.52	2.84	5.32	0.14	3.66	3.52	0.62	5.02	5624
0.61	1.24	0.38	1.71	3.94	0.27	8.96	8.69	1.05	7.04	5623
0.00	10.44	11.05	0.44	50.10	49.66	5376
0.00	1.68	0.65	0.20	2.53	0.56	12.31	11.75	4.75	4.75	5317
1.45	3.04	0.38	0.41	5.28	0.85	10.84	9.99	7.41	7.41	5273
2.23	0.08	0.76	4.07	7.14	0.43	5.76	5.33	0.54	7.56	5604
1.40	2.44	0.22	0.14	4.20	0.31	8.45	8.14	4.97	4.97	5318
0.00	2.72	0.75	0.93	4.40	0.86	10.79	9.93	0.74	7.67	5517
1.29	2.58	0.32	0.15	4.34	0.39	8.82	8.43	10.02	10.02	5362
3.96	2.10	0.00	0.67	6.73	0.96	10.62	9.66	3.22	6.42	5363
0.00	0.04	0.79	3.91	4.74	1.99	12.35	10.36	5319

TABLE 9. ANALYSES OF MIXED FERTILIZER

Station No.	Manufacturer and brand	Place of sampling
5619	Liberty Tobacco Special 5-3-5	East Windsor.....
5364	Liberty Top Dresser for Grass and Grain 8-8-8	Yantic.....
5336	Windsor Fish, Bone and Potash 3-10-4	Guilford.....
5337	Windsor High Grade Market Gardeners 5-8-7	Guilford.....
5418	Windsor Potato and Market Gardeners Special 4-8-7 (Potash as Muriate)	Southington.....
5338	Windsor Special Fertilizer for Fruit 7-8-6	Guilford.....
Armour Fertilizer Works, New York City		
5690	Armour's Big Crop Fertilizers 2-10-2	Plantsville.....
5414	Armour's Big Crop Fertilizers 4-8-4	Thompsonville.....
5677	Armour's Big Crop Fertilizers 5-8-7	Plantsville.....
5601	Armour's Big Crop Tobacco Special 5-3-5 ...	Thompsonville.....
Associated Seed Growers, Inc., New Haven, Conn.		
5305	Clark's Special Mixture for General Use 3-8-4	Milford.....
5306	Clark's Special Mixture with 6% Potash, 3-8-6	Milford.....
5309	Clark's Tip Top Brand 4-8-7	Milford.....
5552	Clark's Tip Top Brand 4-8-7	Orange.....
F. A. Bartlett Tree Expert Co., Stamford, Conn.		
5316	Bartlett Green Tree Food 6-7-4	Stamford.....
Berkshire Chemical Co., Bridgeport, Conn.		
5331	Berkshire 3-8-4 Fertilizer	Danbury.....
5257	Berkshire 3-10-6 Fertilizer	Hamden.....
5731	Berkshire 3-10-6 Fertilizer	Highwood.....
5328	Berkshire Complete Fertilizer 2-12-2	New Canaan.....
5676	Berkshire Complete Tobacco Fertilizer 4-3-5..	Burnside.....
5327	Berkshire Golf Green Fertilizer 8-5-2	New Canaan.....
5325	Berkshire Grass Special Fertilizer 6-6-5	New Canaan.....
5648	Berkshire High Grade Tobacco Fertilizer 5-3-6	Suffield.....
5258	Berkshire Long Island Special 4-8-7	Hamden.....
5303	Berkshire Market Garden Fertilizer 4-8-4	Milford.....
5302	Berkshire Potato and Garden Special Fertilizer 5-8-7	Milford.....
5646	Berkshire Tobacco Special Fertilizer 6-3-7 ...	Suffield.....
5655	Berkshire Tobacco Starter Fertilizer 4-4-15 ..	Bridgeport.....
5533	Berkshire Truck Fertilizer 4-8-5	Bridgeport.....

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

Nitrogen					Phosphoric acid			Potash		Station No.
In nitrates	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "Available"	As muriate	Total	
%	%	%	%	%	%	%	%	%	%	
1.38	0.00	0.54	3.58	5.50	0.18	5.06	4.88	0.64	9.20	5619
1.67	5.90	0.34	0.28	8.19	0.13	9.72	9.59	8.45	8.45	5364
1.19	1.38	0.44	0.12	3.13	0.44	10.85	10.41	4.83	4.83	5336
0.89	3.02	0.31	0.44	4.66	0.78	10.27	9.49	6.96	6.96	5337
0.42	2.64	0.60	0.73	4.39	1.38	13.61	12.23	0.60	7.52	5418
4.46	2.48	0.00	0.12	7.06	0.35	8.73	8.38	6.05	6.05	5338
0.13	1.38	0.18	0.29	1.98	0.47	10.45	9.98	2.75	2.75	5690
0.15	2.84	0.24	0.53	3.76	0.35	8.37	8.02	3.92	3.92	5414
0.77	3.20	0.14	0.83	4.94	0.53	8.75	8.22	7.38	7.38	5677
2.28	0.08	0.32	2.33	5.01	0.13	3.87	3.74	0.76	4.90	5601
0.00	2.12	0.53	0.69	3.34	0.87	8.90	8.03	4.31	4.31	5305
0.00	2.04	0.50	0.67	3.21	0.37	8.44	8.07	6.28	6.28	5306
0.00	2.98	0.50	0.86	4.34	0.25	8.58	8.33	6.88	6.88	5309
0.25	2.58	0.48	0.69	4.00	0.37	8.40	8.03	7.71	7.71	5552
0.00	0.30	5.12	1.00	6.42	2.01	9.51	7.50	4.50	4.50	5316
0.00	2.12	0.63	0.69	3.44	0.25	8.49	8.24	4.61	4.61	5331
0.00	2.12	0.47	0.62	3.21	0.27	10.26	9.99	5.15	5.15	5257
0.00	1.44	1.20	0.62	3.26	0.33	10.74	10.41	6.24	6.24	5731
0.00	1.16	0.66	0.46	2.28	0.88	13.49	12.61	2.21	2.21	5328
0.92	0.12	0.46	2.30	3.80	0.27	3.96	3.69	0.34	5.54	5676
0.00	2.76	1.37	4.00	8.13	1.12	9.08	7.96	2.23	2.23	5327
0.00	4.72	0.65	0.97	6.34	0.44	6.82	6.38	4.92	4.92	5325
1.82	0.10	0.70	2.66	5.28	0.31	3.83	3.52	0.52	6.97	5648
0.00	2.82	0.57	0.89	4.28	0.41	8.72	8.31	6.82	6.82	5258
0.00	2.56	0.54	0.94	4.04	0.59	9.03	8.44	4.00	4.00	5303
0.19	4.00	0.48	0.71	5.38	0.14	8.12	7.98	7.66	7.66	5302
1.57	0.12	0.92	3.31	5.92	0.26	4.29	4.03	0.62	7.38	5646
2.47	0.24	0.48	1.07	4.26	0.42	4.74	4.32	1.22	14.19	5655
0.00	2.32	0.54	1.30	4.16	0.82	9.72	8.90	5.31	5.31	5583

TABLE 9. ANALYSES OF MIXED FERTILIZER

Station No.	Manufacturer and brand	Place of sampling
	Consolidated Rendering Co., Boston, Mass.	
5410	Corenco 3-10-4 Animal Brand	Thompsonville.....
5542	Corenco 3-10-4 Animal Brand	Mt. Carmel.....
5272	Corenco 2-10-2 Bone Brand	New Haven.....
5474	Corenco 4-12-4 Complete Manure	Winsted.....
5275	Corenco 4-8-4 Corn and Vegetable	West Cheshire.....
5276	Corenco 5-8-7 General Crop Manure	West Cheshire.....
5267	Corenco 4-8-7 Market Garden	New Haven.....
5480	Corenco 5-8-10 Peerless Potato	Orange.....
5411	Corenco 4-8-10 Potato Grower	Thompsonville.....
5678	Corenco 6-3-6 Special Tobacco Grower	Unionville.....
5596	Corenco 7-3-7 Super Tobacco Grower	Buckland.....
5645	Corenco 7-3-7 Super Tobacco Grower	Somers.....
5675	Corenco 5-3-5 Tobacco Grower	Somers.....
5274	Corenco 7-6-6 Top Dressing	West Cheshire.....
5550	Corenco 8-16-14 Two-In-One	New Haven.....
5511	Lowell 3-10-4 Animal Brand, High Grade Manure for All Crops	Granby.....
5585	Lowell 5-8-10 Aroostook Special for Potatoes	Southington.....
5513	Lowell 4-8-4 Corn and Vegetable	Granby.....
5482	Lowell 5-8-7 Market Garden Manure	Cheshire.....
5479	Lowell 4-8-7 Old General Crop Manure for Potatoes and Market Garden Crops	Shelton.....
5581	Lowell 4-8-10 Potato Grower	Shelton.....
5412	Springfield Lawn and Shrub Fertilizer 5-5-5..	Thompsonville.....
	Davey Tree Expert Co., Kent, Ohio	
5323	Davey Tree Food 10-3-3	Old Greenwich.....
	Eastern States Farmers' Exchange, Springfield, Mass.	
5379	E. S. 0-14-6	Ellington.....
5335	E. S. 4-8-8	New Milford.....
5587	E. S. 4-10-6	Middletown.....
5332	E. S. 4-12-4	New Milford.....
5627	E. S. 5-5-15 Tobacco	Warehouse Point.....
5342	E. S. 6-8-6	Clinton.....
5334	E. S. 6-15-9	New Milford.....
5628	E. S. 8-4-8	Warehouse Point.....
5333	E. S. 8-16-16	New Milford.....
5377	E. S. 8-16-16 Low Chlorine Special	Ellington.....
5343	E. S. 8-24-8	Clinton.....
5491	E. S. 10-5-10 Tobacco	West Simsbury.....
5378	E. S. 12-16-12	Ellington.....

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

Nitrogen					Phosphoric acid			Potash		Station No.
In nitrates	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "Available"	As muriate	Total	
%	%	%	%	%	%	%	%	%	%	
0.00	2.08	0.94	0.14	3.16	0.20	10.77	10.57	4.09	4.09	5410
0.00	2.12	0.99	0.09	3.20	0.33	10.25	9.92	4.13	4.13	5542
0.00	1.08	0.98	0.06	2.12	0.20	10.09	9.89	2.10	2.10	5272
0.25	2.72	1.13	0.07	4.17	0.28	12.59	12.31	4.21	4.21	5474
0.22	2.64	1.10	0.08	4.04	0.22	8.05	7.83	4.15	4.15	5275
0.41	3.58	0.92	0.07	4.98	0.21	8.45	8.24	6.86	6.86	5276
0.26	2.48	1.15	0.09	3.98	0.18	7.91	7.73	7.26	7.26	5267
0.37	3.70	0.72	0.08	4.87	0.19	9.00	8.81	9.24	9.24	5480
0.32	2.60	0.92	0.10	3.94	0.15	8.63	8.48	9.94	9.94	5411
1.01	0.18	1.38	3.43	6.00	0.09	4.33	4.24	0.50	6.14	5678
1.05	0.12	2.24	3.49	6.90	0.06	4.40	4.34	0.74	7.19	5596
1.54	0.16	2.08	3.32	7.10	0.15	4.31	4.16	0.37	7.10	5645
1.08	0.10	0.74	3.32	5.24	0.10	4.30	4.20	0.34	5.21	5675
0.00	6.52	0.47	0.07	7.06	0.13	6.10	5.97	6.00	6.00	5274
0.88	5.82	1.32	0.11	8.13	0.37	16.49	16.12	14.35	14.35	5550
0.00	2.28	0.87	0.12	3.27	0.25	10.26	10.01	4.33	4.33	5511
0.35	3.20	1.44	0.09	5.08	0.30	9.12	8.82	9.86	9.86	5585
0.27	2.64	1.04	0.11	4.06	0.25	8.34	8.09	4.09	4.09	5513
0.36	2.94	0.90	0.79	4.99	0.67	9.06	8.39	7.33	7.33	5482
0.52	2.54	0.98	0.09	4.13	0.24	8.27	8.03	7.17	7.17	5479
0.00	2.64	1.27	0.06	3.97	0.34	8.67	8.33	9.90	9.90	5581
0.00	2.32	0.79	2.07	5.18	0.71	8.04	7.33	0.74	5.12	5412
1.08	5.64	0.36	2.33	9.41	0.25	3.89	3.64	2.03	3.04	5323
.....	0.81	15.38	14.57	6.42	6.42	5379
0.86	3.26	0.07	0.31	4.50	0.05	9.33	9.28	7.95	7.95	5335
0.98	2.96	0.00	0.22	4.16	0.30	11.88	11.58	6.93	6.93	5587
1.20	2.50	0.34	0.32	4.36	0.54	13.18	12.64	4.69	4.69	5332
3.16	0.12	1.18	1.60	6.06	0.30	6.36	6.06	1.46	16.10	5627
1.88	4.10	0.10	0.29	6.37	0.42	8.95	8.53	6.86	6.86	5342
1.34	4.60	0.28	0.25	6.47	0.06	15.25	15.19	8.78	9.83	5334
2.40	0.20	3.56	2.72	8.88	0.07	4.96	4.89	0.58	8.53	5628
1.58	4.52	1.48	0.30	7.88	0.03	15.76	15.73	16.23	18.78	5333
1.73	5.68	0.22	0.55	8.18	0.17	16.95	16.78	1.07	16.24	5377
2.72	5.40	0.00	0.32	8.44	0.45	25.19	24.74	0.38	9.12	5343
5.08	0.32	1.92	2.62	9.94	0.14	5.85	5.71	0.34	11.14	5491
4.79	6.84	0.26	0.38	12.27	0.14	16.64	16.50	2.32	12.79	5378

TABLE 9. ANALYSES OF MIXED FERTILIZER

Station No.	Manufacturer and brand	Place of sampling
	Goulard & Olena, Inc., New York City	
5485	G & O Lawn, Garden and Flower Fertilizer 5-8-5	New Britain.....
5484	J. B. Greens Formula 10-3-2	New Britain.....
	Paul M. Hubbard & Co., Bristol, Conn.	
5586	Hubbard's Special Lawn Food 10-6-4	Bristol.....
	Millane Nurseries & Tree Experts Co., Cromwell, Conn.	
5589	Millane Shade Tree Food 8-8-4	Cromwell.....
	The Miller Fertilizer Co., Baltimore, Md.	
5359	Lan-Fer Special 8-6-2	Westerly.....
5522	Miller Harvest Brand 4-6-10	Norwich.....
5361	Miller Harvest Brand 4-8-4	Westerly.....
5358	Miller Harvest Brand 5-8-7	Westerly.....
5360	Miller Harvest Brand 7-6-6	Westerly.....
	Old Deerfield Fertilizer Co., South Deerfield, Mass.	
5519	Old Deerfield 5-3-5 Complete Tobacco Fertilizer	Somers.....
5518	Valley Brand 4-8-4	Somers.....
	Olds & Whipple, Inc., Hartford, Conn.	
5375	Luxura 5-8-6	Hartford.....
5647	O & W 6-3-5 Blue Label Tobacco Fertilizer.. (potash derived from C H A)	Thompsonville.....
5600	O & W 6-3-6 Blue Label Tobacco Fertilizer..	Poquonock.....
5622	O & W 5-3-5 Complete Tobacco Fertilizer....	East Hartford.....
5415	Olds & Whipple's 3-10-4 Corn Special Fertilizer	Bloomfield.....
5259	Olds & Whipple's 5-8-7 High Grade Potato and Vegetable Fertilizer	Highwood.....
5621	Olds & Whipple's 5-4-15 High Grade Tobacco Starter and Potash Compound	Ellington.....
5374	Olds & Whipple's 4-8-4 Market Garden Fertilizer	So. Manchester.....

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

Nitrogen					Phosphoric acid			Potash		Station No.
In nitrates	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "Available"	As muriate	Total	
%	%	%	%	%	%	%	%	%	%	
0.46	3.28	0.28	1.10	5.12	1.11	9.78	8.67	5.76	5.76	5485
0.24	0.56	5.38	4.52	10.70	1.00	6.22	5.22	2.93	2.93	5484
0.23	6.72	0.60	2.69	10.24	0.40	6.75	6.35	3.76	4.24	5586
0.12	4.24	3.00	0.51	7.87	0.63	8.74	8.11	4.07	4.07	5589
0.19	4.48	0.84	1.42	6.93	0.19	6.97	6.78	2.97	2.97	5359
0.47	3.20	0.24	0.15	4.06	0.14	6.27	6.13	9.85	9.85	5522
0.00	3.66	0.29	0.15	4.10	0.09	9.00	8.91	5.03	5.03	5361
0.00	4.26	0.50	0.12	4.88	0.10	9.00	8.90	7.35	7.35	5358
0.00	6.50	0.53	0.18	7.21	0.12	7.30	7.18	6.25	6.25	5360
0.78	0.12	0.96	3.27	5.13	0.30	4.84	4.54	0.91	5.58	5519
0.00	3.50	0.56	0.25	4.31	0.50	8.90	8.40	4.17	4.17	5518
0.69	2.36	0.15	2.23	5.43	1.40	12.30	10.90	0.48	6.41	5375
1.12	0.08	0.72	4.48	6.40	0.28	4.41	4.13	0.78	5.14	5647
0.99	0.08	1.20	3.97	6.24	0.18	3.64	3.46	0.58	6.41	5600
0.58	0.12	1.62	3.14	5.46	0.23	4.12	3.89	0.54	5.54	5622
0.35	2.12	0.31	0.49	3.27	0.35	10.45	10.10	4.97	4.97	5415
1.22	3.12	0.36	0.54	5.24	0.36	8.59	8.23	7.67	7.67	5259
2.41	0.10	0.32	2.55	5.38	0.46	5.06	4.60	1.11	15.81	5621
1.13	2.16	0.50	0.48	4.27	0.41	8.85	8.44	3.66	4.13	5374

TABLE 9. ANALYSES OF MIXED FERTILIZER

Station No.	Manufacturer and brand	Place of sampling
5373	Olds & Whipple's 4-8-7 Potato and General Purpose Fertilizer	So. Manchester.....
5372	Olds & Whipple's 8-6-6 Top Dressing and Grass Fertilizer	So. Manchester.....
5370	Wilcox 3-10-4 Corn Special Fertilizer	Willimantic.....
5545	Wilcox 4-8-4 Market Garden Fertilizer	Old Mystic.....
5521	Wilcox 4-8-7 Potato and General Purpose Fertilizer	Willimantic.....
5371	Wilcox 8-6-6 Top Dresser Fertilizer	Willimantic.....
	Outpost Nurseries, Inc., Ridgefield, Conn.	
5329	Outpost Plant Food 8-5-2	Ridgefield.....
	Frank S. Platt Co., New Haven, Conn.	
5269	Platco Special 4-8-7	New Haven.....
5270	Platt's Special Lawn Fertilizer 10-5-5	New Haven.....
	The Rogers & Hubbard Co., Portland, Conn.	
5268	Golf Course Fertilizer 8-6-2	New Haven.....
5287	Gro-Fast 5-6-6	Hartford.....
5421	Hubbard's All Soils All Crops 4-8-4	Higganum.....
5341	Hubbard's "Bone Base" Oats and Top Dressing	Madison.....
5295	Hubbard's "Bone Base" Seeding Down Fertilizer	Portland.....
5590	Hubbard's "Bone Base" Soluble Corn Manure..	Northford.....
5420	Hubbard's "Bone Base" Soluble Potato Manure	Higganum.....
5650	Hubbard's "Bone Base" Soluble Tobacco Manure	East Hartford.....
5883	Hubbard's "Bone Base" Soluble Tobacco Manure	Portland.....
5594	Hubbards' Climax Tobacco Brand 5-3-5	Ellington.....
5470	Hubbard's Corn and Grain Fertilizer 2-12-4..	New Milford.....
5486	Hubbard's High Potash 2-8-10	New Britain.....
5340	Hubbard's Potato Fertilizer 5-8-7	Madison.....
5730	Hubbard's Potato Fertilizer 5-8-7	Branford.....
5592	Hubbard's Tobacco Grower Vegetable Formula 6-3-6	Ellington.....
5288	Red H Brand 4-8-4	Hartford.....
5656	Red H Brand 4-8-4	Portland.....
5419	Red H Brand 4-8-7	Branford.....
5548	Red H Brand 4-8-8	Meriden.....

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

Nitrogen					Phosphoric acid			Potash		Station No.
In nitrates	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "Available"	As muriate	Total	
%	%	%	%	%	%	%	%	%	%	
0.98	2.20	0.38	0.60	4.16	0.40	8.97	8.57	7.71	7.71	5373
4.39	2.90	0.00	0.85	8.14	0.24	6.79	6.55	6.10	6.10	5372
0.28	2.22	0.36	0.53	3.39	0.36	10.83	10.47	5.16	5.16	5370
1.02	2.00	0.40	0.66	4.08	0.58	8.66	8.08	4.55	4.55	5545
0.70	2.72	0.34	0.60	4.36	0.50	9.07	8.57	0.77	7.77	5521
4.48	2.68	0.00	1.11	8.27	0.35	6.71	6.36	6.63	6.63	5371
0.00	2.74	1.08	4.21	8.03	1.56	9.26	7.70	2.25	2.25	5329
0.46	2.56	0.98	0.10	4.10	0.21	8.16	7.95	7.28	7.28	5269
0.00	7.14	0.74	2.66	10.54	0.36	7.44	7.08	5.74	5.74	5270
0.00	1.68	2.57	4.43	8.68	1.00	7.80	6.80	2.71	2.71	5268
0.00	1.28	0.32	3.46	5.06	0.59	6.98	6.39	0.78	6.74	5287
0.81	1.62	0.82	0.71	3.96	1.41	9.93	8.52	4.24	4.24	5421
7.15	0.14	0.08	0.61	7.98	0.94	8.85	7.91	1.83	8.29	5341
0.00	1.52	0.00	1.59	3.11	3.50	12.17	8.67	6.51	6.51	5295
0.77	2.28	0.72	0.42	4.19	0.75	10.10	9.35	7.71	7.71	5590
1.70	1.32	1.08	0.99	5.09	1.50	9.76	8.26	0.32	6.82	5420
1.68	1.08	0.92	1.24	4.92	1.43	10.78	9.35	1.89	9.30	5650
2.19	0.92	1.08	1.21	5.40	1.31	10.34	9.03	1.73	9.95	5883
1.56	0.10	0.86	2.38	4.90	0.09	3.66	3.57	0.53	5.93	5594
0.00	1.14	0.64	0.29	2.07	0.85	12.95	12.10	4.59	4.59	5470
0.00	1.16	0.66	0.34	2.16	0.69	9.45	8.76	10.19	10.19	5486
0.65	2.56	0.86	0.91	4.98	1.29	9.50	8.21	7.05	7.05	5340
0.42	2.16	1.72	0.73	5.03	1.08	9.42	8.34	7.25	7.25	5730
1.38	0.14	0.46	4.08	6.06	0.40	3.91	3.51	0.62	6.57	5592
0.00	3.20	0.67	0.21	4.08	4.05	11.69	7.64	4.09	4.09	5288
0.00	3.18	0.63	0.23	4.04	0.40	9.04	8.64	4.55	4.55	5656
0.00	3.40	0.66	0.17	4.23	0.38	8.77	8.39	7.87	7.87	5419
0.23	2.94	0.50	0.20	3.87	0.35	8.72	8.37	8.43	8.43	5548

TABLE 9. ANALYSES OF MIXED FERTILIZER

Station No.	Manufacturer and brand	Place of sampling
5289	Red H Brand 5-8-7	Hartford.....
5365	Red H Brand 7-6-6	Norwich.....
5742	Red H Brand 7-6-6	Portland.....
5547	Red H Brand 8-16-14	Portland.....
	O. M. Scott & Sons Co., Marysville, Ohio	
5481	Scott's Turf Builder 10-6-4	Yalesville.....
	Sewerage Commission of the City of Milwaukee, Milwaukee, Wis.	
5473	Milorganite	Torrington.....
	M. L. Shoemaker & Co., Philadelphia, Pa.	
5281	Swift-Sure Tobacco Starter 4-10-0	Suffield.....
	Standard Wholesale Phosphate & Acid Works, Baltimore, Md.	
5487	Standard United States 3-8-10	Ellington.....
5344	Standard United States 4-8-4	New London.....
5315	Standard United States 5-8-7	Westport.....
5345	Standard United States 5-8-10	New London.....
5743	Standard United States 5-8-10	New London.....
5314	Standard United States 5-10-5	Westport.....
5380	Standard United States 7-6-6	Ellington.....
	Summers Fertilizer Co., Baltimore, Md.	
5313	4-8-4 Fertilizer	East Bridgeport.....
5300	4-8-7 Fertilizer	Orange.....
5312	5-8-7 Fertilizer	East Bridgeport.....
5356	5-10-5 Fertilizer	New London.....
5357	8-8-8 Fertilizer	New London.....
5785	8-8-8 Fertilizer	Norwich.....
	Swift & Co. Fertilizer Works, Baltimore, Md.	
5271	Vigoro 4-12-4	New Haven.....

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

Nitrogen					Phosphoric acid			Potash		Station No.
In nitrates	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "Available"	As muriate	Total	
%	%	%	%	%	%	%	%	%	%	
0.00	4.24	0.57	0.21	5.02	0.71	8.89	8.18	7.25	7.25	5289
0.00	6.00	0.40	0.16	6.56	0.17	6.87	6.70	6.69	6.69	5365
0.49	5.68	0.62	0.21	7.00	0.56	6.90	6.34	6.51	6.51	5742
0.00	8.10	0.15	0.15	8.40	0.42	17.31	16.89	14.45	14.45	5547
0.00	6.06	0.48	3.66	10.20	0.19	6.20	6.01	3.29	4.01	5481
0.21	0.08	0.26	5.27	5.82	0.39	2.80	2.41	5473
0.00	2.56	0.36	0.86	3.78	1.76	12.32	10.56	5281
0.00	2.80	0.20	0.33	3.33	0.43	8.75	8.32	9.54	9.54	5487
0.00	3.48	0.37	0.35	4.20	0.40	8.49	8.09	4.28	4.28	5344
0.22	3.90	0.10	0.74	4.96	0.58	8.76	8.18	6.98	6.98	5315
0.00	4.40	0.28	0.39	5.07	0.41	9.05	8.64	7.23	7.23	5345
0.00	4.28	0.34	0.33	4.95	0.57	8.94	8.37	9.21	9.21	5743
0.00	4.12	0.51	0.40	5.03	0.41	10.81	10.40	2.58	5.39	5314
0.26	5.92	0.02	0.60	6.80	0.65	7.79	7.14	6.21	6.21	5380
0.79	2.82	0.18	0.31	4.10	0.99	9.00	8.01	4.35	4.35	5313
0.76	2.80	0.16	0.35	4.07	1.02	9.34	8.32	7.57	7.57	5300
0.88	3.66	0.15	0.32	5.01	1.18	9.25	8.07	7.18	7.18	5312
0.73	3.80	0.12	0.37	5.02	1.49	12.03	10.54	5.12	5.12	5356
1.12	3.20	1.12	0.36	5.80	1.18	13.39	12.21	7.85	7.85	5357
1.23	4.10	0.02	0.30	5.65	1.27	13.40	12.13	7.74	7.74	5785
0.25	3.36	0.04	0.35	4.00	0.47	13.20	12.73	4.30	4.30	5271

TABLE 9. ANALYSES OF MIXED FERTILIZER

Station No.	Manufacturer and brand	Place of sampling
Synthetic Nitrogen Products Corp., New York City		
5591	Nitrophoska 15-30-15	Woodstock.....
Tennessee Corp., Lockland, Ohio		
5478	Loma 5-10-4	Waterbury.....
5488	Soil-Prep 4-2-2	Hartford.....
I. P. Thomas & Son Co., Philadelphia, Pa.		
5262	High Grade Potato Manure 4-8-10	North Haven.....
5260	I. P. Thomas 4-8-7	North Haven.....
5261	Royal Guano 4-8-5	North Haven.....
5255	Tip Top Fertilizer 3-10-6	North Haven.....
5256	Truckers High Grade Guano 4-8-4	North Haven.....
Virginia Carolina Chemical Corp., Cartaret, N. J.		
5298	V-C Aroostook Potato Grower 5-8-7	Middletown.....
5297	V-C Tip-Top Top Dresser 7-6-6	Middletown.....
5296	V-C XXXX Fish and Potash 4-8-5	Middletown.....
F. H. Woodruff & Sons, Milford, Conn.		
5304	Woodco 10-6-4 Lawn Food	Milford.....

CONTAINING NITROGEN, PHOSPHORIC ACID AND POTASH

Nitrogen					Phosphoric acid			Potash		Station No.
In nitrates	In ammonia	Organic water-soluble	Organic water-insoluble	Total	Citrate-insoluble	Total	So-called "Available"	As muriate	Total	
%	%	%	%	%	%	%	%	%	%	
2.02	12.52	0.12	14.66	0.11	30.22	30.11	14.59	14.59	5591
0.29	4.24	0.18	0.42	5.13	0.50	11.44	10.94	4.39	4.39	5478
0.00	2.12	0.63	1.75	4.50	0.20	2.56	2.36	2.81	2.81	5488
0.00	1.53	2.19	0.28	4.00	0.32	8.54	8.22	9.85	9.85	5262
0.00	3.36	0.31	0.38	4.05	0.45	9.11	8.66	6.96	6.96	5260
0.00	3.08	0.57	0.39	4.04	0.53	8.76	8.23	5.39	5.39	5261
0.00	2.24	0.54	0.24	3.02	0.81	10.85	10.04	6.02	6.02	5255
0.00	3.18	0.59	0.29	4.06	0.24	8.39	8.15	4.46	4.46	5256
0.00	4.52	0.22	0.18	4.92	0.49	7.98	7.49	7.29	7.29	5298
0.00	6.16	0.16	0.14	6.46	0.26	6.59	6.33	6.40	6.40	5297
0.00	3.48	0.25	0.29	4.02	0.15	8.15	8.00	5.50	5.50	5296
0.00	3.16	3.52	3.42	10.10	0.25	7.35	7.10	4.36	4.36	5304

TABLE 10. SUMMARY OF CHEMICAL DEFICIENCIES

Manufacturer	Number samples	Number guaranties	Deficiencies			Percentage of guaranties met	Percentage of guaranties met, period 1930-34
			Nitrogen	Available P_2O_5	Potash		
Acme Guano Co.	4	12	1	0	0	92	..
American Agricultural Chemical Co.	18	54	3	0	6	83	90
American Cyanamid Co.	1	2 ¹	0	0	0	100	85
Apothecaries Hall Co.	14	42	2	1	0	93	94
Armour Fertilizer Works	4	12	1	0	0	92	86
Associated Seed Growers, Inc.	4	12	0	0	0	100	96
Bartlett, F. A. Tree Expert Co. ...	1	3	0	0	0	100	93
Berkshire Chemical Co.	14	42	1	0	2	93	94
Consolidated Rendering Co.	22	66	1	1	1	95	93
Davey Tree Expert Co.	1	3	1	0	0	67	83
Eastern States Farmers' Exchange	13	38 ²	1	1	0	95	90
Goulard & Olen, Inc.	2	6	0	0	0	100	90
Hubbard, Paul M., & Co.	1	3	0	0	0	100	..
Millane Nurseries & Tree Experts Co.	1	3	1	0	0	67	93
Miller Fertilizer Co.	5	15	2	0	0	87	79
Old Deerfield Fertilizer Co.	2	6	0	0	0	100	95
Olds & Whipple, Inc.	14	42	0	0	0	100	100
Outpost Nurseries, Inc.	1	3	0	0	0	100	..
Platt, Frank S., Co.	2	6	0	0	0	100	100
Rogers & Hubbard Co., The	23	69	2	1	1	94	96
Scott, O. M., & Sons Co.	1	3	0	0	0	100	..
Sewerage Commission of the City of Milwaukee	1	2 ¹	1	0	..	50	..
Shoemaker, M. L. & Co.	1	2 ¹	1	0	..	50	88
Standard Wholesale Phosphate & Acid Works	7	21	1	0	3	81	78
Summers Fertilizer Co.	6	18	2	0	1	83	..
Swift & Co. Fertilizer Works	1	3	0	0	0	100	90
Synthetic Nitrogen Products Co..	1	3	1	0	1	33	71
Tennessee Corp.	2	6	0	0	0	100	100
Thomas, I. P., & Sons Co.	5	15	0	0	0	100	96
Virginia-Carolina Chemical Co. ...	3	9	1	1	0	78	87
Woodruff, F. H., & Sons	1	3	0	0	0	100	..
	176	524	25	5	15	92	..

¹Only two guaranties for this sample.²One sample with only two guaranties.

TABLE 11. ANALYSES OF SPECIAL AND HOME MIXTURES

Station No.	Name of mixture	Place of sampling	Total nitrogen	Phosphoric acid			Potash			Station No.
				Citrate-insoluble	Total	So-called "Available"	As nitrate	Total	Chlorine	
			%	%	%	%	%	%	%	
Sampled by Station										
6206	Berkshire Economical Grass Fertilizer, 8-5-8	State Highway Dept., Hartford	7.92	1.18	8.48	7.30	7.46	8.27	5.63	6206
5310	Home Mixture for Potatoes ..	T. W. Ryan, Stratford	4.59	0.56	9.69	9.13	5.52	5.52	5310
5311	Home Mixture for Vegetables ..	T. W. Ryan, Stratford	4.78	0.34	9.70	9.36	4.76	4.76	5311
6207	Special Mixture	State Highway Dept., Hartford	3.24	2.55	12.63	10.08	7.40	7.40	6207
5620	Special Home Mixture for Potatoes	A. Mullenite & Son, Broad Brook	8.93	0.32	17.87	17.55	16.47	5620
5575	Special Mixture for Tobacco ..	John Leonard, East Hartford ..	6.00	0.31	4.63	4.32	8.19	0.53	5575
5626	Special Mixture for Tobacco ..	A. Mullenite & Son, Broad Brook	6.77	0.32	4.98	4.66	0.66	7.08	0.50	5626
Sampled by Purchaser										
5121	Formula A—No. 1	American Sumatra Tobacco Co., Bloomfield	5.54	0.24	3.27	3.03	5.39	0.41	5121
5147	Fertilizer—Formula 1, Lot 60..	Consolidated Cigar Corp., Hartford	6.33	0.46	4.83	4.37	5.96	0.37	5147
5148	Fertilizer—Formula 2, Lot 61..	Consolidated Cigar Corp., Hartford	6.62	0.26	3.94	3.68	5.75	0.26	5148
5149	Fertilizer—Formula 1, Lot 62..	Consolidated Cigar Corp., Hartford	6.00	0.24	5.03	4.79	6.65	0.35	5149

TABLE 11. ANALYSES OF SPECIAL AND HOME MIXTURES—Continued

Station No.	Name of mixture	Place of sampling	Total nitrogen	Phosphoric acid			Potash			Station No.
				Citrate-insoluble	Total	So-called "Available"	As muriate	Total	Chlorine	
5150	Fertilizer—Formula 2, Lot 63..	Consolidated Cigar Corp., Hartford	% 6.26	% 0.34	% 4.26	% 3.92	%	% 5.83	% 0.29	5150
5151	Fertilizer—Formula 1, Lot 64..	Consolidated Cigar Corp., Hartford	6.00	0.52	5.57	5.05	6.45	0.35	5151
5152	Fertilizer—Formula 1, Lot 65..	Consolidated Cigar Corp., Hartford	6.03	0.61	5.23	4.62	6.81	0.38	5152
5153	Fertilizer—Formula 2, Lot 66..	Consolidated Cigar Corp., Hartford	6.28	0.34	4.25	3.91	6.28	0.35	5153
5154	Fertilizer—Formula 1, Lot 67..	Consolidated Cigar Corp., Hartford	6.12	0.45	4.65	4.20	6.67	0.38	5154
5155	Fertilizer—Formula 2, Lot 68..	Consolidated Cigar Corp., Hartford	6.43	0.40	4.08	3.68	6.18	0.34	5155
5156	Fertilizer—Formula 1, Lot 69..	Consolidated Cigar Corp., Hartford	6.32	0.50	5.04	4.54	6.28	0.34	5156
5157	Fertilizer—Formula 2, Lot 70..	Consolidated Cigar Corp., Hartford	6.33	0.42	4.39	3.97	6.35	0.34	5157
5158	Fertilizer—Formula 2, Lot 71..	Consolidated Cigar Corp., Hartford	6.50	0.36	3.50	3.14	5.83	0.31	5158
5556	Special Mixture, Apothecaries Hall Co.	D. A. Kreider, Country Club, New Haven	5.00	0.44	10.00	9.56	5.56	5.56	5556
5617	Special Mixture for Tobacco ..	Henry E. Wells, Warehouse Point	7.94	0.83	7.09	6.26	15.86	1.35	5617

VII. MISCELLANEOUS FERTILIZERS AND OTHER MATERIALS

SHEEP MANURE, ETC.

Nineteen official samples of sheep, cattle and poultry manures have been examined and analyses are given in Table 12. One sample was analyzed for a purchaser.

Sample 5324, Summers Venezuelan Goat Manure, was very wet when sampled and on the "as is" basis was below guaranty. When sampled, the material was in a dry place and there was no evidence that it had become wet while in storage there.

LIMING MATERIALS

Analyses of limestone and other liming materials are given in Table 13.

OTHER MISCELLANEOUS MATERIALS

Forty-one samples of miscellaneous materials have been examined for individuals. Most of these need no special notice but a few may be noted for reference purposes.

5254. **Garbage** from City Garbage Plant, Bridgeport, Nitrogen 2.63%, total phosphoric acid 4.09%, air-dry basis.

5848. **Muck** submitted by Water Works Dept., Southington. Water 83.60%, ash 0.81%, organic and volatile matter 15.59%, nitrogen 0.26%.

4666. **Star Fish**, submitted by E. W. Smith, Mt. Carmel. Water 62.00%, nitrogen 2.26%, phosphoric acid 0.40%, potash 0.28%. If dried, the fish supply about 155 lbs. of plant food to the ton.

5350. **Dried Star Fish**, submitted by F. R. Whitney, New Haven. Nitrogen 5.33%, phosphoric acid 0.99%, potash 1.10%. In the air-dry condition, as received, this material supplies about 148 lbs. of plant food to the ton.

4808. **Tobacco stalks**, ground, submitted by the Tobacco Sub-station, Windsor. Nitrogen 3.41%, phosphoric acid 0.84%, total potash 4.57%.

4092. **Digested Sewage Sludge**, submitted by the Sewer Commission, Greenwich. Water 64.00%, ash 17.31%, organic and volatile matter 18.69%, nitrogen 1.17%.

6061. **Activated Sewage Sludge** from New Canaan Plant submitted by LeRoy W. Van Kleeck, State Board of Health, Hartford. Water 20.44%; ash 36.80%; organic and volatile matter 42.76%. Total nitrogen 2.70%; insoluble organic nitrogen 2.48%; "active" insoluble organic nitrogen 1.35% (54.4% of total insoluble); total phosphoric acid 1.93%; "available" phosphoric acid 1.73%; potash 0.12%.

6165. **Peanut shells**, submitted by Department of Soils. Nitrogen 1.42%; phosphoric acid 0.25%; potash 0.65%.

TABLE 12. ANALYSES OF SHEEP MANURE AND OTHER MATERIALS

Station No.	Manufacturer or brand	Place of sampling	Nitrogen		Total phosphoric acid		Potash		Station No.
			Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	
5277	AAC Pulverized Sheep and Goat Manure. American Agricultural Chemical Co., West Haven	Bristol Supply Co., Bristol	1.34	1.23	1.00	1.00	3.66	2.00	5277
5320	Liberty Domestic Sheep Manure. Apothecaries Hall Co., Waterbury	J. B. McArdle, Greenwich	2.06	1.80	1.94	1.00	2.85	2.00	5320
5475	Sheep and Goat Manure. Apothecaries Hall Co., Waterbury	Chas. R. Hawley, Winsted	1.21	1.25	1.02	1.00	2.58	2.00	5475
5691	Sheep and Goat Manure. Armour Fertilizer Works, New York City ..	C. A. Cowles, Plantsville	1.52	1.25	1.20	1.00	3.15	2.00	5691
5322	Driconure. Atkins and Durbrow, Inc., New York City	J. B. McArdle, Greenwich	1.83	1.00	1.11	1.00	1.43	1.00	5322
2563 ¹	Breck's Rams Head Brand Sheep Manure. Joseph Breck and Sons Corp., Boston, Mass.	G. M. Williams Hardware Co., New London	1.54	1.46	0.86	0.75	2.78	3.00	2563
5264	Two-In-One Peat-Poultry Manure. C. E. Buell, Inc., Boston, Mass. ...	Lightborn & Pond Co., New Haven	3.48	2.75	3.02	2.50	1.25	1.25	5264
5339	Corenco Sheep Manure. Consolidated Rendering Co., Boston, Mass.	Knowles-Lombard Co., Guilford ..	1.25	1.23	1.20	0.50	2.15	2.00	5339
5469	Davey Shredded Cattle Manure 2-2-2. Davey Tree Expert Co., Kent, Ohio	R. E. Landis, Old Greenwich	2.08	2.00	2.41	2.00	1.91	2.00	5469

¹ 1933 stock.² Guaranteed "available" phosphoric acid 1.75%; found 2.79%.

5483	"Big Sheep" Brand Pulverized Sheep Manure. Emporia Elevator and Feeding Co., Emporia, Kansas									
5286	"Sheep's Head" Pulverized Sheep Manure. Natural Guano Co., Aurora, Ill.	1.92	2.00	1.87 ³	2.60	2.00	5483		
5263	Premier Brand Pulverized Poultry Manure. Premier Poultry Manure Co., Chicago, Ill.	2.28	2.00	1.40	1.25	5.04	2.00	5286		
5413	Wizard Brand Cattle Manure. Pulverized Manure Co., Chicago, Ill. ..	4.92	4.93	2.80 ⁴	1.35	1.30	5263		
5330	Wizard Brand Pulverized Sheep Manure. The Pulverized Manure Co., Chicago, Ill.	2.44	2.00	1.74 ⁵	1.71	1.00	5413		
5290	Pulverized Sheep and Goat Manure. The Rogers & Hubbard Co., Portland	2.23	2.00	1.60 ⁶	3.04	2.00	5330		
5471	Pulverized Sheep and Goat Manure. The Rogers & Hubbard Co., Portland	1.80	1.25	1.11	0.75	3.36	2.00	5290		
	W. L. Richmond & Son, New Milford	1.47	1.25	1.20	0.75	3.19	2.00	5471		
	Rackliffe Bros., New Britain									
	Caldwell & Jones Co., Hartford ...									
	Lightborn & Pond Co., New Haven									
	Brainard Nursery, Thompsonville...									
	H. E. Meeker, Danbury									
	Factory, Portland									
	W. L. Richmond & Son, New Milford									

³ Guaranteed "available" phosphoric acid 1.00%; found 1.67%.

⁴ Guaranteed "available" phosphoric acid 2.50%; found 2.68%.

⁵ Guaranteed "available" phosphoric acid 1.00%; found 1.43%.

⁶ Guaranteed "available" phosphoric acid 1.00%; found 1.45%.

TABLE 12. ANALYSES OF SHEEP MANURE AND OTHER MATERIALS—Continued

Station No.	Manufacturer or brand	Place of sampling	Nitrogen		Total Phosphoric acid		Potash		Station No.
			Found	Guaranteed	Found	Guaranteed	Found	Guaranteed	
5618	Standard United States Sheep Manure. Standard Wholesale Phosphate and Acid Works, Baltimore, Md.	Saugatuck Grain Co., Saugatuck... Wm. J. Rice, Stamford Frank S. Platt Co., New Haven ...	%	1.75	%	%	2.00	5618
5324 [*]	Summers's Genuine Venezuelan Goat Manure. Summers Fertilizer Co., Baltimore, Md.		1.96	1.75	1.34 ⁷	2.65	2.00	
5489	Bovung. Walker-Gordon Laboratory Co., Inc., Plainsboro, N. J.		1.38	1.00	1.15	1.00	2.83	3.00	5324
			2.14	2.00	2.30	2.00	1.87	2.00	5489

⁷ Guaranteed "available" phosphoric acid 1.00%; found 1.22%.⁸ Stock as sampled contained 41.24% moisture.

TABLE 13. ANALYSES OF LIMESTONE AND SIMILAR MATERIALS

Station No.	Manufacturer or brand	Sampled from stock of or sent by	Chemical analysis				Total oxides	Mechanical analysis					Station No.
			Lime (CaO)		Magnesia (MgO)			20 mesh	40 mesh	50 mesh	80 mesh	100 mesh	
			Found	Guaranteed	Found	Guaranteed							
5614	Louis E. Allen, East Canaan, Conn. Limestone	Louis E. Allen, East Canaan	% 32.13	%	% 19.99	%	% 52.12	%	%	%	%	%	5614
5528	Apothecaries Hall Co., Waterbury, Conn. Hydrated Lime and Magnesia	A. N. Shepard & Son, Inc., Hartford	46.34	32.36	78.70	5528
5235	Land Plaster—Truck 17938	Hatheway and Steane, Hartford..	34.41	0.16	34.57	5235
5466	The Connecticut Agstone Co., Northford, Conn. Limestone	Charles R. Treat, Orange	43.99	4.67	48.66	92.0	79.4	70.1	58.7	53.6	5466
4546	Lee Lime Corp., Lee, Mass. Lime No. 54—Car N.H. 171356	Consolidated Cigar Corp., Hartford	46.67	32.26	79.93	4546
5580	Hydrated Lime	Cullman Bros., Hartford	46.38	31.69	78.07	5580
4459	New England Lime Co., Pittsfield, Mass. Agricultural Limestone—Car No. — N. H. 165651	Cullman Bros., Hartford	41.31	28.87	70.18	4459
4749	Hydrated Lime, No. 1	American Sumatra Tobacco Corp., Bloomfield	46.77	32.89	79.66	4749
5116	Lime	L. B. Haas & Co., Inc., Hartford ..	38.22	40.00	26.66	15.00	64.88	5116
5444	High Magnesia Hydrated Lime	Orman E. Street, Tobacco Station, Windsor	40.49	40.00	27.48	15.00	67.97	5444
5527	Olds & Whipple, Inc., Hartford, Conn. Land Plaster	A. N. Shepard & Son, Inc., Hartford	33.74	5527
4770	Manufacturer Unknown Spray Hydrated Lime ¹	J. F. Mulcahy, West Hartford ...	72.95	0.63	73.58	4770
4722	Limestone	R. A. Atherton, County Agent, Litchfield	30.77	21.75	52.52	4722
5382	Lime	Wm. E. Perkins, Lapham Field House, Yale Field, New Haven ..	30.36	19.39	49.75	5382
5998	Nova Scotia Plaster	E. N. Austin, Suffield	38.74	5998

¹ Passes 325 mesh, 98.5%.

CHECK MEALS AND FERTILIZERS

Twenty-four samples of check meals and mixed fertilizers have been analyzed in connection with the collaborative programs of the American Oil Chemists Society and the F. S. Royster Guano Co.

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